

NEWINGTON CONSERVATION COMMISSION

Special Meeting

January 17, 2013

I. CALL TO ORDER

Chairman Block: As it is now a few minutes after 7:00, I'm calling this special meeting of the Newington Conservation Commission to order.

II. ROLL CALL

In attendance:

Philip Block, Chairman
John Igielski, Secretary
Dr. Kathleen Clark, Member
Jeffrey Zelek-Vice-Chairman
Adreas Sadil, Member
Alan Paskewich-Alternate-Vacant Position

Absent:

Philip Shapiro, Member

Chairman Block: I'll ask for a motion to accept the minutes of the prior meeting of January 8th, 2013.

Commissioner Clark: Move that we accept the minutes of January.

Chairman Block: Any additions or corrections?

Commissioner Igielski: This is the first time that I am seeing these minutes because I was unable to print everything out in the electronic version that was sent, I just noticed at the top of the page it refers to the meeting of January 8, 2012. All the other pages do index it.

Chairman Block: In the interest of accuracy, do we want to table this until the next session when we can all have a better chance to read it? It is important that we have an accurate record, so motion to table that please?

Commissioner Sadil: Motion to table.

Commissioner Zelek: Second.

The vote was unanimously in favor of the motion with six voting YES.

Chairman Block: With that, we will start the public hearing on Application 2012-22, Russell Road north of Old Highway. Is the applicant, first is there any Communication and Reports. Anything new to be added to the record before we start?

Chris Greenlaw: Nothing other than the plans before you and the correspondence that we received yesterday that I stamped in.

Commissioner Block: Can you identify them for the record please?

Chris Greenlaw: The plans have been revised, the plan date shows the revision date of January 16, 2013, you should all have a copy, and there is a copy available for the public as well, as well as engineering. In addition to that we received yesterday, two correspondences, one from BL Companies, January 14th, addressed to myself from Mr. Gradwell and additionally there is a pamphlet, a letter from Dru Associates stamped in January 16th.

Commissioner Zelek: Mr. Chairman, there is one document that I am interested in seeing. When I read the minutes of the last meeting there was reference to a letter from the DEEP that went to, I believe Toll and BL and that made some avocations I believe based on that letter. It had something to do with I believe a 150 foot buffer recommendation. Do we have a copy of that letter?

Chris Greenlaw: We have a copy in the record and that copy should have been e-mailed to you and a hard copy as well.

Commissioner Zelek: I don't think I have seen it.

Chris Greenlaw: The other Commissioners have received it?

Commission: Yes.

Commissioner Sadil: I've got it right here.

Commissioner Zelek: Okay, thank you.

Chairman Block: With that being up to date now, we've been having the, using our prior format does the Town of Wethersfield have anything that they want to put forward at this time?

Commissioner Sadil: Mr. Chairman, do you read in the notice of public hearing?

Chairman Block: Oh yes, thank you Commissioner Sadil.

Chris Greenlaw: Notice of Public Hearing, this was a Hartford Courant proof, the insertion date was 1/15/2013. It's a Notice of Public Hearing Town of Newington Conservation Commission Town Hall Conference Room L101 Lower Level Thursday January 17, 2013 7:00 p.m. The Newington Conservation Commission will hold a public hearing to consider the following: Application 2012-22 for a proposed 48 lot open space residential subdivision development on Russell Road, north of Old Highway, Newington by Toll Brothers Inc., 53 Church Hill Road, Newtown, CT 06470. All materials and plans relevant to the above application are on file at the town engineering office. Dated at Newington January 9, 2013 Phil Block Chairman, Newington Conservation Commission.

Chairman Block: Thank you. Again, does the Town of Wethersfield have anything to report?

Attorney Branse: Thank you Mr. Chairman. As you know from my last appearance here we had been working cooperatively with Toll Brothers to address one certain wetlands issue and really one more planning issue, but we're sort of wrapping together the documents. The wetland issue is to be sure that there is long term perpetual maintenance of the detention ponds for the water that flows toward Wethersfield. You may want the same provisions for the water flowing towards Newington as well but I leave that to you. As I reported to you last time, the way that we are addressing this is by having not just the association as a liable party if you will, party against whom the restriction can be reinforced, but also the individual lot owners. So even if the association lacks funds or fails to keep itself organized or

whatever, we have the right to go directly against the lots, to place a lien against the lots and the right of access to do the work ourselves if we need to. The discussions that we have had involve a situation where first the association is charged with performing the maintenance, if they fail to do so, Newington has the right to go in and do it, and charge against the lot owners. If Newington does not do it, Wethersfield can notify Newington and say, we're going to do it, and we can also go in and do the maintenance work on the basins and charge back the expense against the lot owners. We've been working on the text for these documents for a number of weeks, we did finalize them today, I have transmitted to Mr. Greenlaw a cover e-mail and I have copies of that with me, and this was reviewed with Toll Brothers before it was sent with you, and I just touched based with Mr. Regan again today to make sure we're all together. I have a dozen copies of the cover e-mail and then I also have copies of the declaration of Newington Walk which includes this language that I'm describing, by the way I did submit that to Mr. Greenlaw in the final version. He has seen earlier drafts in his capacity as Town Engineer, so this is the declaration, and then also part of the zoning review to include a landscape buffer in the sort of the southerly tier of lots that would sort of buffer the homes from Russell Road, so that was part of the zoning. You will see references in that first declaration and also this last document I'm handing out which is a declaration of conservation easement which calls for the preservation of that landscaped buffer. I realize that more toward Wetlands, the landscape buffer although I would point out that leaving a wooded area does reduce the potential for runoff and it does provide some stability for those slopes along Russell Road. The plan that was provided to you last year did have this wooded buffer. In some of the iterations it disappeared, but BL Companies have sort of redesigned and got it back again and this easement makes sure that it remains in place. I would say to the Commission that if the adoption of these documents were made conditions of your approval that that would address the items in our Notice of Intervention, it would be the feasible and prudent alternatives that we asked the applicant to pursue and that they have pursued. So I feel that our Intervention would be addressed in this matter. I would also state to you, as noted in my cover letter the declaration includes detention pond maintenance plans and requirements. Those do not directly relate to what is on your plans because the plans have been changing. As I said at your last public hearing, we recognize that it is hard for BL Companies to do a detailed maintenance plan when the detention ponds are moving, and even this week, I did see a possible alternative design that severs the connection between the two road systems. That again would be a different type and location of detention pond and we understand that, so what we were asking in the e-mail is that the details of the detention pond maintenance plans be subject to the review and approval of Mr. Greenlaw once the plans themselves are finalized. In that way he will be able to gear those documents to the way the plans themselves actually end up.

Commissioner Paskevich: I have a question. You refer to road plans, two road areas?

Attorney Branse: Yes.

Commissioner Paskevich: Which are those?

Attorney Branse: I saw.....

Chairman Block: Excuse me, that was a conceptual modification that was passed around. Until the applicant accepts it and puts it forward, it's really a pipe dream at this point.

Attorney Branse: My apologies. I guess my only point is that I know that the plans are evolving in response to your consultant's comments and other suggestions and so the exact lot numbers of the buffer may change. Right now they are still one to six as shown on these documents and it looks like it will stay that way, and again, those detention pond maintenance details may have to be modified depending on how those detention ponds actually end up in shape and location and

volume and things like that. I mentioned last time that there were two berms that were put in, that were added last time, that will probably need some other maintenance that is not addressed in this document that we are using, but it is kind of a place holder and it contains the basic elements of a detention maintenance plan. Mr. Turner our Town Engineer has reviewed it, he's with me tonight, he's satisfied with it as a template if you will, a beginning point and we, as I say again in the e-mail and as I said last time, Wethersfield takes no position, pro or con toward the development or the overall application. We have complete confidence that Newington officials can handle Newington development decisions. Our only reason for being here is to be sure that drainage headed toward Wethersfield wetlands is protected in the long term.

Commissioner Clark: I have a question about, on page three of the declaration, item 9.

Attorney Branse: The declaration of Newington Walk?

Commissioner Clark: Correct. The declaration of Newington Walk, is this an appropriate time to ask? It's paragraph nine which talks about the amount of money that would be put into a reserve account and it says that, for the benefit of the public, in order to satisfy its obligation to maintain the basin and to replace trees in the buffer area that shall die of natural causes, the Association shall establish a reserve account which shall be funded by a payment of \$125.00 per each house lot sold, that sum to be payable at the time of closing on each such lot. That amount seems too small to be useful in the case of the maintenance that I know that I had to perform on my own house involving trees and drainage. This does not seem like a large reserve fund.

Attorney Branse: Well, let me sort of clarify. You used the right term, which is reserve fund. This \$5,000 fund is not for the maintenance of the basins, and it is not for replacement of trees. It is for a catastrophic event. There is to be a \$5,000 reserve in the account at all times. That is not for operating. That's your emergency fund if you will. The document also provides for annual payments by all lot owners that are to be used for the actual maintenance and monitoring work, so the \$5,000 is not intended to be, to actually finance the annual expenses. I would also say to that, I did ask Mr. Turner about this figure and he feels that this is a figure for a catastrophic failure of a detention pond, that is to say, if the berm totally failed, he feels that the \$5,000 would be adequate.

Commissioner Clark: Am I allowed to say, I disagree. I disagree by a factor of quite a bit.

Attorney Branse: That's quite all right, I'm not an engineer, so I, Mr. Turner, anything you want to add?

Commissioner Clark: I will make one point, during Hurricane Irene, is that the first one, I had a tree fall across my pool, and it cost me \$4500.00 to remove one tree from my backyard, so I think that number is just, and I don't know anything about fixing detention ponds but.....

Attorney Boorman: May I also point out, if you read the rest of the paragraph there is a provision that allows the association to replenish the fund by further assessments that might be required. This is the first time that we are all seeing this, so we're going to have time to deal with this, so it's not going to end with this situation.

Chairman Block: For my two cents, in that one paragraph second line, that shall die of natural causes, what happens if it gets cut down?

Attorney Branse: If it gets cut down, you will see in the other document, the Declaration of Conservation Easement, if it's deliberately cut down, it has to be replaced by the largest commercially available tree. Not nursery stock, the largest available commercial tree. This is the

first time that I have drafted language like that, and I'm hoping that it will be used again. There is also something that you should be aware of. Connecticut General Statutes were amended just about two, three years ago, to include special penalties for trees that are cut in conservation easement areas. That was done because people were doing that, people were saying, you know, I'll shoot first and ask forgiveness later. Cutting trees in conservation areas to open up a view, or what ever, and the penalty was, well, you have to plant this little nursery sapling, well, you know, fifty years later it turns into a tree, you cut it down again. I was actually involved in one of the big cases of that called Ventress versus Good Speed Airport which is where a man cut down the trees in Chatham Pond Wildlife Refuge so that he could get an easier landing for his private jet into his airport, and the penalty was \$50,000 which you can't plant anything for that. It was in response to things like that that the Connecticut General Statutes were amended. So now there are some serious penalties. This will be a conservation easement, this will qualify for treatment under that, but I have also put in my own piece of that, which is, largest commercially available tree, and let me tell you something, that is a big tree and the largest commercially available tree, you are talking like \$20,000 a tree, and that's fine with me.

Chairman Block: The next thing that comes is an autopsy.

Attorney Branse: It's funny that you said that, because Mr. Regan and I had that conversation, is there such a thing as an autopsy for a tree? I think it could be hard to prove deliberate versus natural causes, worst case, they have to plant a new tree, best case, maybe, if somebody is really dumb and just goes in there with a chain saw, and cuts them down, we don't have to debate whether it was natural causes or not. Then we demand the largest commercial available tree.

Chairman Block: I have seen borings that have been filled with salt, I have seen copper nails, I have seen that.

Attorney Branse: People do try those things, you're absolutely, I figured, it's a remedy I've never tried before, it's better than not having it at all.

Chairman Block: I agree with that, and we will look at it, and if we come up with any meaningful comments, we will submit them.

Attorney Branse: Thank you. Thank you for taking me at this time.

Attorney Regan: Good evening, for the record, Tom Regan, attorney from Brown, Rudnick, LLT, City Place One, Hartford Connecticut here tonight representing the applicant Toll Brothers. Forgive me, this is my third hearing this week, so my voice is starting to falter. I don't really have much to add except to second what Mark said that we've come to an agreement with them on both the conservation easement and the declaration of easement which satisfies.

Audience: Can't hear you at all.

Attorney Regan: I don't have much to add to what Mark said other than just concurring that we have come to an agreement with Wethersfield on both the declaration of Newington Walk and also the declaration of conservation easement. We're in agreement with what we have negotiated with them, and with what Mark submitted, so other than that, I don't have much on that issue.

Attorney Boorman: When would you expect the final versions to be done? I understand the time table is tight and we are stretching things as it is, but when would you expect that those will actually be done?

Attorney Regan: Those are done, I mean, they are done unless you guys have any comments that you want to add to us, but as far as, at this point, those are all the salient issues that we have that we think pertain to these issues. If there is anything, or comments that you have, or you want to add, or anything that you want to see, or conditions you want to place on, feel free to let us know. We'll be happy to take any comments. But as far as the issues with Wethersfield, those do address them and we are in agreement with Wethersfield on that.

Chairman Block: Thank you. At this time Mr. Regan, do you want to proceed with the applicant's presentation, or do you want to hear from George?

Attorney Regan: I think at this point, we would prefer to hear from Mr. Logan because I think quite honestly after the last time we've added everything new that we had to add with the exception of the additional reports that we've submitted that Chris has read into the record. I don't think we have anything further new at this point. The revised plans that Chris received reflect plans that we showed at the hearing the other night and that is just a follow-up and then we followed up with the hydrology budget and the pollution loading revisions that Mr. Logan asked Dr. Abrams for, but other than that, at this point we don't have anything new to present, I think we would just rather just hear Mr. Logan and go from there.

Chairman Block: I think that would expedite matters. Thank you.

Attorney Regan: Thank you.

George Logan, REMA Technological Services: Here is the report, I have one copy for myself and one for the applicant at this point. Sigrun Gadwa is coming with the rest, we had an issue with the copier.

Audience: Please use the microphones.....

George Logan: So as I was saying, Miss Gadwa is on her way, and what I am going to do tonight, this is obviously a detailed and lengthy report, there are a lot of attachments to it. What we have tried to do, for the most part is address the questions that we had, on November 28th, we had list of questions, thirty-five or so questions that we put forth. Those have been answered in one way or the other over a period of about a month and a half, it's been on several reports and as you may recall, on January 8th when we were here last, we had some additional questions, or should I say clarifications of previous questions to make sure that the applicant understood what we were trying to do. So what I would like to do tonight is not go through the entire volume, but more of less touch on some of the salient issues that we have.

Issues such as the hydrology of Wetland Two, the water quality renovation, the storm water management system and the potential impacts upon Wetland Two which is the one that we are focusing on for the most part, not to ignore Wetland One or Three, we will talk about those a little bit too.

To sort of frame some of the disagreements that we have with the applicant, there are a few fundamental disagreements that we have, and then talk about some of the things that could remedy our concerns going forward. We don't have a lot of time, but seeing some of the things that the applicant has produced in the last few days, they can work pretty fast, as we can also. So what I have done in this particular report, as you will see, is I've listed all of the materials that we have reviewed, and the list actually grew a little bit this morning, we received an e-mail that we didn't see until late afternoon, or sometime in the afternoon of some revised plans and revised drainage report which I think was more to address some of the concerns that the Town Engineer had. The list of things that we had reviewed that are a product of the applicant for the most part, and also the ERT is a list of twenty-five items. I did not list the neighbor's submissions, the

citizen's submissions, we did look at a number of those, and as you will see in the report, we have mentioned a couple along the way that we felt were salient to our review.

One of the things that I would like to do first, because we get into the details of an application, but what I would like to do is to show you some photographs first and unfortunately I didn't put them all together in one place, so if you will forgive me, they will come up one by one.

I think you all remember this, this is when I was first out at the project site, back in November, I'm sorry, June of 2011, this Commission had asked me to verify the delineations on the site. This is of course two, it's the vernal pool habitat and I was there at the right time to see, obviously 2011 was a wet year, so there is plenty of water in that area.

This is another view of the same wetland, more towards the north of it.

This is of the lobe, if you will, if you remember it's a heart shaped so the left ventricle lobe, this is what it looked like back in June of 2011, and this again is from November of this year, is the buttonbush scrub shrub swamp and as you can see there are a couple of trees that have fallen across. There's one of them.

Moving on to this photograph, this is again in November where we waded through two inches of water I think at that point we were talking about maybe a foot, so I was able to get into the center of this wetland and I took this picture of this unidentified aquatic plant. I thought I would give it to my associate Sigrun who loves to keep things up, but the point that I am bringing up is that there are two things here; this is just one example of aquatic plants within this pool that I hadn't seen for a long time, and they were kind of vaguely recognizable, but not something that I usually come across. Again there were two or three species in this general location in November which indicates to me that if they are there, in such proportions it gives you an idea of Wetland Two having a long (inaudible) at least in some sections of it which I would call semi-permanent flooded in most years. I know we have had some disagreements about that, but that's my opinion.

Wetland Two again, the swamp cottonwood grove, the threatened species facing southeasterly and you can see from those the water going a little higher, and again, this discovery was something that we made in November for the first time.

More recently, with snow on the ground, this is again the edge of Wetland Two, and again in the general vicinity of the swamp cottonwood grove, this is yours truly on January, 2013, we're doing some soil testing and extracting soils which we will talk about later, for a test for chemicals and I will explain what happened there, we don't have the results yet, when we get to that portion I'll discuss it with you. Again, the buttonwood swamp, and you can see that flag that hanging there on the left, that's Dru Associates, E-2, and I don't know if you can see it, but right to the right of that, that little pink right there is the place where we did our boring, where we went down eight plus feet.

Talking about borings, these are the cores. We used a bucket auger and then we used a combination of a core extractor if you will that can go down and you can, you have a sleeve, this is an aluminum sleeve on the left, and then the other is a plastic. You can basically get to the point where you want to take samples and you more or less bang the sample down exactly six inches. You won't get any more or any less and then withdraw the core samples. Now these core samples were in my possession for about two weeks I believe, in my office. Obviously they don't look that clean, they've been thoroughly and properly washed. Those caps are, don't allow anything to go in them, so they are permanently closed because you want to keep the moisture in there and whatever else you, the sample that you have. What this shows you is where these cores were extracted. It's not very easy to see, but core one was from 34-40 inches within Wetland Two, and then we had core three, which was an interesting phenomena which is just from 40-78 inches. Now this was, now we got six inches from 40-78, that is not usually something that we like to do, but in this particular case when we had to reach the end of core one and then we started to try to get the auger down, and it just went with very little pressure, so core three is a disturbed sample if you will, and I will explain some of the results there as we get to them. Core four was from 90-96 inches and then at 97.5 inches we hit what we what we believe is most likely bedrock. Core number five is from the northern portion of the wetland, in the general location that Dru Associates had their samplings, sampling cores that we witnessed

together. So here is the cores. This is core one, core one is the 34-40 inches and what you can see is that the upper portion, up is and we were able to tell which way the sample is, blue is as you remember the cap is sky, red is earth, that is how we remember what is up and what is down. You can see that there is sort of a transitional zone from the upper horizon down to that 34 inches which most of that is muck, organic soil not even (inaudible) it's just a muck. Then there is transitional zone which is a mineral but has a large proportion of organics and that is what you see there in the upper portion of that, and then obviously it looks more like a glade, silt loam which it is as it turns out. This is core number five, now core number five is the orange tag if you recall and that was from the same location in the northern portion of the wetland and what I have done here by the way, so that you know what you are looking at, in the presence of the Lab Director of the UConn laboratory, we have extracted carefully this sample. She has witnessed that, we have cut it in half so that I can see what it looks like, maybe touched a little bit here to get a textural, what I think the texture might be, and then immediately after the photograph goes off and this particular one was weighted immediately for doing a (inaudible) population, you have to do the wet and then when it dries up you do the dry and then you can come up with the bulk density and then from there extrapolate the velocity which we will also talk about.

This is core number three, the weird one, six inches from 40-78, whatever we got, and you can see, there's a lot of water to it and that came out of the sample, and a lot of organics, but also similar mineral horizon that turns out also I think to be a sub loam, clay. This is from the bottom of the lowest place, I think it was 92-96 if I recall, core number four and this was interesting. This also has organics, it has some other interesting things that are happening. There's a little sand here, at least to the feel, turned out in general to still be a sub loam, but it was drier than the other samples. So this is the driest one, you can also see from it's color that it's a little blonder than the other ones that are more glade, this gray color which indicates the presence of anaerobic conditions for prolonged periods of time, means, for the most part, most of the mineral soils underneath Wetland Two never see oxygen. I shouldn't say they never see oxygen, there isn't a lot of oxygen to be had, just whatever is in the local ground water.

Again, this is a close up of Core Number Four, this is the upper portion and that is the lower portion, and then, one final photograph. I thought this was interesting, how often do you see green colored soils at eight feet? This is a sacralite. This is basically a chemically decomposed bedrock, a piece of bedrock that just over time has, over thousands of years obviously since the last glaciation has disintegrated. I know that there are organics in there too. This is just a very good picture and myself and my friend Bill Jackson, myself on the left, him on the right, and this is one of the augers that we used and you see behind the auger the shaft, if you will, the extension which is actually ten feet.

Now that you have seen the pictures,

Commissioner Paskevich: Can I just ask a question? Back to the anaerobic condition in the sample, does that identify a ground water table?

George Logan: No. It just identifies that there is water there for prolonged periods of time. My whole assessment, and I'll go through this and maybe this is a good time for me to say at least this, is as wetland scientist when we look at wetlands, one of the first things we were kind of trained to do is to say, okay what is this geomorphic setting? There are four of them, we categorize them, ground water slope, ground water depression and then surface water slope and ground water slope. This one is a ground water depression and I want to read you, this is from 1993 Ecology of Red Maple Swamps in the Glacial northwest, it's like the white paper for, and when it says Red Maple Swamps, Red Maple Swamps is the most common swamp we have. There are other obviously, but this is not one. But, the ground water depression, and I'm reading here, these wetlands occur where a basin intercepts the local ground water table so the ground water discharge as well as the (inaudible) over land flow. Classic ground water depression wetlands have no surface drainage leaving the site however occasional stream flow out may occur from basin overflow. That's what we have here, two areas of overflow, showing in one of

the aerial photographs. Ground water in-flow may be continuous or seasonal. That is important. Depending upon the depth of the basin and the degree of fluctuation of the local water table, local water table, not the regional, not the sub regional, but local, this is a localized phenomena . I was very encouraged when the wetland water is higher than the local ground water table, e.g., after major crepitation events and dry seasons. Ground water recharge may occur and ground water may enter the wetland basin from all directions or remain discharged in one area and recharged in another. That's the definition, so I think one of the, and I'm not sure at this point to be honest with you, I thought, I really respect Russ Slayback, I've known him for years, I thought we were at loggerheads, but the more I listen to him, and I think the more he listens to me, I think we are kind of coming together and that he maybe understood that I was talking about a deep ground water fed wetland and that is not the case. What I was talking about all along is that at a season there is ground water that enters this basin and all it's sediment and there is some interaction and he's seen it, and I've seen it, this thing will dry out, but because of the fact that you have a lot of organics there, I doubt sincerely that this wetland is ever dry, meaning you know, you can dig and there is no water, I'm sure, in view of the organics there, within two, three, four, five, six inches you are going to have water there most of the time. Which again speaks to what kind of plants are actually growing. Okay, so I have a few figures, and I know that I am jumping around, but I thought that looking at a few pictures might center us all as to what we are talking about because when I start talking about detention basin discharge....Ray should be talking about that. Okay, so here we go. This is the site taken in March, 29th, 2012 courtesy of Google Earth. You see a complete site, we have some structure on Wetland Two, Wetland Three very visible, you can see the wetland border, I'll get back to that in a moment. Figure four, in Wetland Two, I think one of the neighbors also, I think John put this up for you folks. I figured out this is 2012 only because the same pictures in some other site that I knew was 2012 and what you see here is two overflows, and if you look at the topography provided in the existing condition maps, you can kind of see that there is a low spot there also, and the wetland is at full capacity and can go, you can see too, drainage, I wouldn't call it water courses because they would have to be discharging ground water flow on a regular basis, which these don't, but when there is an overflow this is what happens.

Commissioner Zelek: Those over flow areas, are those something that we should have indicated on our wetland maps?

George Logan: No, they're not regulated, they're not jurisdictional. You have a point to that, and over the twenty-four years or so that I have been doing this I can see that there have been a few times that I have looked at something and determined that it was not a water course for some reason based on the statutes, and then it came back to bite us because someone put a house on it and then the water had to go somewhere and there were problems. So it is always a good thing to look at things like that and if there are areas that would overflow during the wet years. In Rhode Island, this is not a water course, this would be an ASSF, an area subject to storm flow, so they have a different definition, so you are supposed to map those and even though they are not regulated. Does that answer your question?

Commissioner Zelek: I'm concerned that if it is not a regulated area, what if there was some type of activity through that area that obstructed those water flows? What would be the impact, and should we make a notation on our wetland maps that these exist, even though they are not regulated but just have a notation for future reference?

George Logan: I think it's a good idea and I remember recently, recently a few years back and I was doing a subdivision in East Hampton actually and we had a site there and there was a couple of these drainage areas that we, the Commission was very particular in making sure that even though they weren't regulated, because of the basic knowledge that this is the way that the water would normally go, and so we made whatever provisions for that.

Commissioner Zelek: So Mr. Chair, at some point I would like to move that we add these features to our wetland maps with a notation.

Chairman Block: Yes, we can consider that but on the revised plans of the 16th, which we now have in front of us, that's all going to be open space, so there is not any intention of any structures to be built.

Commissioner Zelek: It is only open space if the application is approved. So, say this was not an approved application, and we had another application subsequently come before us, I want this noted so that we do not disturb this area, or if there is any other activity.....

Chairman Block: I note your concern.

Chris Greenlaw: Last year if I can remind you that we had two applications for the mountain here. One of them was a map amendment, one was (tape change). At that time, I believe it was you George, REMA Ecological Services that was hired to verify the map amendment as proposed by the applicant. At that time you reviewed the site, you reviewed the plans and you concurred with the findings. I have two things to offer to that note. So that map was verified. In order for the wetland map, the wetland and water course map to be amended, there is a process, and it's an application. So we've had, not only did we have at the time last year our own maps that indicated wetlands, we had an applicant provide and go through the map amendment process for wetlands and watercourses we identified. It was verified by Mr. Logan and we accepted that as a Commission and therefore we could amend our maps. What I would suggest is that process being complete, that if you wanted to possibly assure that this area is not mitigated, but protected is the word, perhaps the designer could just put a note, storm water overflow, a note on the plans at some point, but to note it on our maps, we can't do that without a map amendment process and that is an application and we have already been through that and Mr. Logan, possibly you can comment a little bit more on this storm water overflow.

Commissioner Zelek: Chris, just one second, I'm just want to respond to Chris. I'm not going to rebut that we haven't been through that. This is new information about these water flow areas that was not discussed when we did that map amendment. This is new. So what I'm saying, it's not going to be a regulated area, I want us to look into the possibility of making notations on our town maps even though it's not a regulated area so if another application comes before us, we need to be aware of this, we can't lose sight of it.

Chairman Block: Two points, I think we have already heard prior testimony from others that I think it is the western overflow outlet, that there was some evidence of some interference with the natural embankment. George is that the area?

George Logan: I, at some point I remember seeing that, and I was looking in the field several times. It seems that every time I go there I look.....

Chairman Block: But I think the basic issue is your testimony is that when there is a period of high, extra high flow, that this is where the lower boundary is breached. In these two locations.

George Logan: Correct, I will call it natural. I didn't necessarily see this as a ditch or something like that. The north side is a little more natural, there's a stone wall there, you can see how the water gets there, the point I need to make, first of all this is 2011, not 2012, I apologize for that, is that 2011 I was out there. Not too long after that, I looked at those areas and I determined that they were not jurisdictional water courses.

I wanted you to see this, it gives you an interesting view of the wetlands. You can see these scraggly trees that are in the wet and those are the swamp cottonwoods, they're pretty distinctive and you can see that they are almost like a small tree.

Commissioner Sidel: Can you zoom in on that area?

George Logan: Sure. This is as far as you can go without messing it up, the photograph is not high resolution, so I apologize for that. You can see how wet it is, so these swamp cottonwoods like their feet wet for a significant portion, not necessarily deep, but they perfectly are right now. Another picture I wanted to show you is this, this is your mountain, and you can see the black line on the perimeter and you can see the subject site, and as you pan through you'll see that what we are dealing with is the largest contiguous forest in the area, now why is this important? We're here for the wetlands. The landscape context and the general ecological integrity of the area is very, very important to the functions and values of the wetland. So when you see the little blue there, that's what Nemo, up at UConn determined to be wetland number two. The reason for pointing this out is that very often it's the context, the landscape context in a particular area of wetland that you are looking at that determines again how unique and functional it may be. So there are two factors, we have had a basic fundamental disagreement with the applicant's consultants, and I'm not sure that we can overcome it, maybe we can. That is this, we believe that this is a unique wetland, it's a unique site, has unique wetlands and more to the case, Wetland Number Two is unique. It has a unique assemblage if you will of cover types of the scrub shrub swamp with almost like a (inaudible) with the cottonwoods, and then with the trees all around it, some open areas, it's got variable hydrology and then I think this species that are documented in the vernal pool, habitat, in the geographic center of your largest remaining forest and I will show you what I mean by that. Here it is. So, here is your site on the bottom, and you go up and this is the total amount of contiguous forest, 159 acres. You don't have something else anywhere close, so if you were just looking at inventory and assessing the functions and values of wetlands, just in the Town of Newington, this would be perhaps your most unique, most pristine wetland that you have in Newington just based on the landscape context and the fact of where it is and the integrity of the surrounding area. And I know that we have some fundamental disagreement here, but I haven't said anything, but I think it's time for me to say something about that, so, here we go. 1934, we talked about the 1934 photograph, this is directly from the State Library Achieve, so what you see here and I've tabbed a few things. I tabbed the pasture, in the vicinity of here, the upper portion of Wetland Number One. It was a pasture, we found a old, you know those milk cans, those old aluminum milk cans, there is one in the middle there somewhere, and at the very, very top of the wetland, just outside, there is an old pit that was basically a length of clay pipe that was sunken into the ground, and that is where the water is for the cows. So that was a pasture. The northern half of the site, back in 1934 was densely wooded and it's kind of grainy to see what is going on. Surrounding immediately to Wetland Number Two, it appears that this is a wood lot, possibly people taking wood out, and I also identified it as a pasture before that and this we know a century and a half ago, there were not any trees along here to speak of, then you can see yourself the decent field you have in the cultural field which at the time was just not (inaudible). So that is 1934, look if you will at the photographic signature of Wetland Two. It looks pretty wet, it looks as if some stuff is growing in it, both large and small, and as I compared the 1934 with the 1965 aerial photograph and the most recent aerial photograph, really don't see much difference. I heard something from Dru Associates that they thought things were progressing so that someday this wetland would not be what it is. Well, it doesn't look like it's moved much, or changed much at least from the photographic signatures that I'm looking at since 1934. That's important. Why is it important? Because there is a particular ecological hydrological bounds in these particular wetlands that we're potentially ready to contemplate disturbing. 1965 is the next picture, zoom a little bit, and you can see probably the water was a little further down here, and the photograph, on the left side, you can see the signature that was the swamp cottonwoods and you can see the buttonbush very clearly, and of course it's all grown

in except for that corner right here that is an old field now. All right. A couple of things, and again, there is a lot of detail in this report, and at some point I might have Sigrun come up and speak about her three or four top points of things that she looked at more carefully than I did, and I'll do the same for mine. Wetland Two is the issue. If Wetland Two wasn't what it is, if Wetland Three was Wetland Two, I don't think there would be much to talk about. If Wetland One was Wetland Two probably not as much to talk about. This is a unique resource. You have the threatened cottonwoods and one of the things that I'm thinking to this day, and I know that the applicant is sort of at a disadvantage where it is this late time of the season, but I don't believe that there has even been a robust inventory of biota associated with this wetland.

Chairman Block: Say that in English?

George Logan: Say that in English. Say I'm working for the applicant, and the applicant says, George, what do you need, what do you think we should do here, I want to apply right now, it's November. Time out. This is unique, we don't know what's in there. It looks like a vernal pool, so yes, we're going to do a vernal pool study, but I want to know, have the full botanical inventory of what is there, and I might have to look at it for a whole season. Certain things come out later, certain things come out, so the spring (inaudible) if I do it in summer, miss them, certain things that come out in the late summer, so if you see something that is unique, and also realize that the site is special, and if the site is special and Sigrun will talk about this at some point, and not a lot of detail, just a little bit because she has specific experience, this geology is what drives uniqueness. So you can go throughout Connecticut and you don't have a lot of trap rock ridge and mountains. You do have some and you all know where they are, and they're quite unique and if you go there, there's special things there. That's why I like going up to Avon Mountain. So that's an inventory of the botany and then an inventory of all the animal life, not just the, what flies, what crawls, what walks, but also because based on the vegetation you would find there, you would be able to say, okay there is a uniqueness on moths and butterflies, there might be some special dragon flies, we know there are a list of dragon flies that like some of these situations, so you need to do something and spend sometime properly inventorying the resource. It looks like we have kind of fallen into the fact that there is the largest most robust swamp cottonwood population in southern New England that's threatened. We kind of fell into that. So what else could we fall into if we were there during the proper season. I'm going to jump around and I want to go through them before I go into some specifics but, maybe I'll wait. Section two of our report which is mostly the work of my associate Sigrun, is, what we have tried to do there, is to look at every single one of the thirty-five questions, look at the answers, and then have a little discussion of what we saw, so I'm not going to go through it in its entirety, I think I'll have Sigrun come up at some point and we can quickly talk about maybe a couple of specific things, but some of it, if you look at it, you might initially gloss over, it's the kind of technical speak that consultants have for each other about the capacity of a particular habitat for a particular species and who breeds where and when and how much of a population and what is the juvenile survival etc., all trying to distill that into what my position, our position is at this point. So I don't want to go through these questions, but they are there and I'm sure that the applicant is going to go through them and probably have some responses and possibly some revisions. What I want to do is go back and circle around to Wetland Two and talk about hydrology, so the storm water quantity, not from a storm water, not from a two year storm, five year storm, but what happens in a given year. How does the water arrive there? So I'm going to talk a little bit about geohydrology and look at some of the results of our studies. What one of my major concerns are, my two major concerns, in respect to Wetland Two, and Wetland Two is unique in this manner. It is an embayment. It is an isolated kettle. Basin. Whatever you want to call it which means the water that comes in from its watershed, about thirteen acres, for the most part stays there and does something, and interacts with what is in there. During the large, the wet years that we saw just a moment ago but in most years there is no significant overflow, if any. The water sits there, evaporates, interacts with the ground water, and so on, so one of the things that I had

asked of the applicant was to do a water budget analysis. I'm going to pick on Ray first, and then I will go back and pick on Don. Trying to be funny here, but in all seriousness, this is something that I have a concern about. We might be able to discuss it. So there is a section in there,

Chairman Block: Excuse me, you made a statement before and I want to make sure I have it clear in my mind. You said that this is a very limited watershed, thirteen acres and that there is really no outflow from this watershed. It all stays in the basin.

George Logan: There's no regular outflow, so.....

Chairman Block: So that means that any chemical that is added into the entire watershed eventually has to concentrate in the wetlands at the lowest point.

George Logan: It could bio-accumulate, that is exactly right, and that is one of our concerns.

Chairman Block: Okay.

George Logan: And we'll talk about that in a little detail, maybe not too much because we would be here until 1:00. Okay, the water budget, so Mr. Gradwell who I know and respect, have done work with him in the past, I gave him this challenge and it was a challenge because admittedly this is not something that we ask for on a regular basis, and as a matter of fact I can probably think in the twenty-four years that I have done this, three times, and one of them was for creating a wetland. So it is not admittedly something, it's not, if we can't avoid it, there was some language in there, in Ray's report that said, well it's not a requirement. Well, there are no specific requirements, but somewhere, I forget which section it says whatever the Commission needs. If they think they need it in order to understand what is going on in a particular wetland and how it might be impacted, you ask for that, and this is an obvious one. There are a lot of wetlands out there that have tremendous watersheds and a lot of through flow. This doesn't. This has a limited watershed, thirteen acres, 12.86 according to the applicant, so what the outcome, what BL Companies did is they had a conversation and they asked what water budget would you like to, can you give us some information, and I remember in the last memo we generated and it had a very simple formula, and the formula is kind of a water budget for me, it says, what comes through surface flow, through ground water flow, what goes out, the same way, evapotranspiration of that change is also part of the equation. They looked at that formula, they had some other things that I gave them, and they attempted to deal with all the components of the water budget. They apparently did follow this basic formula that we talked about. There was one conspicuous and important omission without which they cannot come to the conclusion that they have in the letter. What's the conclusion in the letter? I'll read it. I hacked out a couple of words so it makes sense.

Chairman Block: Can you identify the date of the letter?

George Logan: The letter was dated January 14th, 2013 and it was provided to me by e-mail probably on the 15th, Wednesday, I recall it was Wednesday. The past thirty-six hours a little bit of a blur for me, so I had to think about it. This is what this letter said, this was their conclusion in page 2 of their report, "a small amount of additional runoff delivered to Wetland Two from upland soils and development off set the infiltration loss through evapotranspiration in the area of the storm water management features upland in Wetland Two thus allowing wetland to stay wetter for longer periods during the dry season such as the 2010 that was analysed." So if I can make it more clear, they realize and I think they recognize that because you are putting grass out there and landscaping that has a different (inaudible) value, impervious surfaces, that more water is running off and collecting than let go, than is infiltrating. Under proposed condition, most of the, depending of course on the soils and the slopes, most of the precipitation, in most cases in the

forest doesn't go, it just seeps into the ground and interacts with the soils. So I think that BL Company recognized that by doing this development, within the watershed of Wetland Two, and why don't I go and look at that particular figure. Now obviously this figure, we know there have been some changes and some potential changes that have changed this a little bit, but in essence this concept stays the same, so in the blue area, and I think I discussed this, but it may be a difficult concept to get initially, I think it took me a couple of days to figure this out, and I'm not that smart. So the blue, under the proposal that I was looking at which was the revised January 2nd, but the blue is 4.18 acres of current water shed that under existing conditions would contribute water, either surface flow or shallow ground water flow, to Wetland Two, which under the proposed conditions with a little caveat that I will talk about in a second, would not. It would be the water that would be generated on the blue area through the, basically diverted away either by pipes, by shallow surface flow, or by the fact that, particularly the bottom portion of the area, things are happening there. The topography is changing, there is some blasting, there is some earth work, and so on that is happening, so the assumption that I have made, and I think this is something that Mr. Slayback has also put in one of his reports is that the assumption in this topography in the bedrock geology that we have and the shallow soils, is that whatever the watershed is, is also most likely the ground shed. So the water infiltrates into the ground, it's probably going to end up here, or somewhere else, we'll discuss that in a moment. But the idea is that the water will infiltrate in the blue area under existing conditions, is no longer going to do that, either to the same extent or at all. Now, this is the flaw in the water budget that the BL Companies did. They looked at everything else. They looked at the inflow, surface inflow, figured that out, no problems with that. They looked at the potential evapotransformation, they could have gone one step further and looked at the actual evapotransformation based on coverage, but at least they looked at the general potential evapotransformation and they figured that out. They made a stab as to how much water is leaving the Wetland Two via ground, recharging. I don't have a problem with that, it's small, but they calculated that. They picked a year that they thought made more sense because they thought that it would be more conservative to do that, and they picked a dry year, which was 2010 which had about thirty-five inches versus your typical forty-five inches, so they ran those numbers. But the one thing they didn't do, or talk about the ground water in-flow, and that's conspicuously missing and I believe that is a flaw in the water budget, so therefore you don't have a water budget. They are very close, except for that fact, and that's the so-called sixty thousand dollar question. If you knew the answer to that, or at least took a good guess at it, you would be able to look and say, okay, looking at my balance, how much is my ground water in-flow being reduced? Is it significant, is it X percentage and not more than five or ten percent perhaps, but we might argue though you know, thirty, forty percent, and the other question is, what about the surface flow? Well the surface flow, if you did gallons to gallons you might be able to come up and say, okay, we're not going to deny this wetland because as they say, there is going to be a little extra water. Maybe that is not good either, we'll discuss that in a moment. But, from a ground water perspective, if they take this blue out, for the most part, and turn it into surface water, now under the potentially revised plan X proportion of that, I'm not sure exactly, I haven't seen any calculations, I haven't seen any revised maps, remember they took the basin outlet from basin number four I believe, and CERT had an issue, DEEP actually had an issue with reviewer, that you cannot discharge on slopes that are greater than five percent. That's in the 2009 Guidelines of the Erosion and Sedimentation Control, so what they did is, they looked around and said, ha, here's a flat area, so we'll put something right here. The problem is that it's in a saddle, but maybe that's not bad, so some of the water will go southwest and some will go north, and replenish Wetland Two, so we will have a little more surface runoff down these slopes. The issue that I see is that, and I don't want to be a stickler, is yeah, your immediate discharge point is sort of in a flat area, but the water is going to go down almost as steep a slope going this way and that way, and it's going to reconstitute, and to be honest with you, I'm sure I like that any better. I have some ideas, but again, I don't have to design this project for them. But anyhow, the reason for saying that is that under the potential scenario that we have here, which again I haven't seen the revised plans, is

that some of this water that is translated into surface water in this blue area is now going to be transmitted into surface water directed towards the wetlands, not away from it as it was before. Again, as I said before, in an effort to maybe balance the ground water issue, the total water issue, the applicant had suggested putting this beige area, that's another 4.2 acres so it balances the blue and the beige/orange balance as far as watershed that is going towards the wetlands, so they lost the blue and they gained the orange. The problem with the orange one is that it can't do anything for us as far as ground water infiltration is concerned because apparently it doesn't give anything to us so the only thing you can get from that area is surface flow, and that is going down to detention basin number three, which is a hundred feet from the wetland.

Chairman Block: I notice this red area extends beyond the boundary of the property.

George Logan: It does.

Chairman Block: So therefore, the applicant really has no control I presume over that part. That reduces the 4.2 down to about what, if whoever owns that property decides not to allow that to remain.....

George Logan: To be honest with you, I didn't calculate what is off site, as a matter of fact, you see, I ran out of map, but there is a, it kind of does a little boggy thing, but it does that today.

Chairman Block: But there is no insurance that it will do it tomorrow.

George Logan: If someone went in and did something, no. Exactly, now, they might like that, I don't know.

Commissioner Sadil: I just, relative to, I'm trying to get a take away, the blue area relative to the brown and the surface flow. You say relative to the plan that you saw, that blue area is going to be starved, or.....

George Logan: Two things will happen, under current conditions the blue area water either runs off towards the wetland or infiltrates into the ground and eventually finds itself toward the wetland. How much is the big question. Under the proposed scenario pre-recent potential vision, the blue area are going to have two things happen, one, a lot of it now where water used to infiltrate into the ground is now picked up by pipes, storm sewers and is taken to various discharge points through detention basins, and the ground water, the water that still can infiltrate, is infiltrating in an area, particularly down here and to some extent up there, where there are some wholesale changes to what is happening in the ground. There is either blasting, there is deep trenching for utilities, soils are taken, other soils are put back in, there's a lot of changes, so it admittedly would be a nightmare trying to model this.

Commissioner Zelek: So it would be 4.18 acres....

George Logan: Yeah, the blue is 4.1....

Commissioner Zelek: So that is roughly thirty percent of the thirteen acre watershed.

George Logan: Yes.

Commissioner Zelek: Now, the blue area, if it is contributing ground water to the wetland basin number two, is that water leach in minerals, does it contribute minerals to the composition of the wetland?

George Logan: Yes, we'll get to that point too, that's another big question. So again, the one thing that I was trying to get from the water budget analysis was this section, the question was, how much water that previously infiltrated and got to the wetland in some proportion....okay, so the other issue is, you have ground water and you have surface water, well, it's all water that's going to get there eventually. The blue area, maybe some of was being diverted away, but some of it, we'll put it back in, so maybe there is a balance. So what is some important about losing some ground water and replenish it with surface water. Well, it's the kind of, ground water is different surface water. We've seen (inaudible), and Sigrun and I have seen a lot of them, even vernal pools which are more surface driven, which are more flashy so if you have surface flows because the water runs off quicker towards the wetland. The water goes up, the water goes down, so you have a lot of amplitude and flashy, whereas the ground water takes some time to get there and so during the critical period in the spring, and maybe say into the early summer, you have a more reliable source of water that is sort of metering out the water over time, which is, apart from the chemical constitution, we'll talk about why that is important to us at least from a water quantity perspective, it's a different kind of water. It's a different animal. It comes slowly into the wetland, it replenishes and it's not flashy, so it keeps it more of a state to state, this wetland is not used to flashy.

Commissioner Igelski: Mr. Chairman, if I may ask a question? The orange area today, where is that ground water going?

George Logan: Both the surface and the ground water go to the west.

Commissioner Igelski: What will be done in light of construction to redirect that flow to compensate, or proposed to be eliminated with the blue area?

George Logan: Again, there is nothing they can do about the ground water, because there is no way they can get ground water to go to this wetland because it doesn't go there today, so it can't go there tomorrow. So the only thing that they can do is to take the surface water runoff, bring it to detention basin number three and say, well we're going to infiltrate the water here, that poses some other questions that we will get into to, but I think that would be the idea. The idea is we'll bring this relatively large detention basin number three, it's just a hundred feet away.

Commissioner Igelski: And how does the underground contour of the rock which seemingly is an unknown come into play.

George Logan: Well, I don't know, because it is an unknown. I mean, a lot of what I am looking at is from indirect evidence, I'm looking at the soils, I'm looking at infestations, I'm looking at the apparent hydrology, things like that. We'll speak to a few of those things as we go along.

Chairman Block: Is there any rule of thumb for the purporting between the surface water and the amount that goes into the ground, that contributes to the ground water flow? Is there any rule of thumb, because on the surface, they are saying 4.19 equals 4.2 but under what you are saying to us, the actual water budget, as you have used before, apparently is not going to be any where near as equal.

George Logan: Well part of it we don't know. I suspect that it is not going to be equal, but that is why I asked for a water budget and that was the omission there. There are some other things which we will talk about, but we don't know what is happening as far as the ground water, and the ground water is again, this wetland is a ground water depression, so ground water is relative. It's not a surface pool in our view. So, we are going a little bit around in circles and we probably will continue coming back to this, but I did want to discuss another thing that was interesting. So here is the table.....

Chairman Block: Excuse me George, before you go on to that, we need an expert opinion, quite simply, is the information that is presented in that diagram and supported by the applicant's reporting to date give you any degree of confidence that the water that is now entering the wetland area is going to be greater, or lesser, significant greater and lesser, if they re-contour and develop the property as they are proposing?

George Logan: I'm coming to a conclusion in a sense, but that's fine. I want to get there, my conclusion, based on what I have seen, what I have been given, is that the hydrologic budget for this wetland both in quantity and quality will change to a degree that it will be detrimental to the ecology and functionality of this particular wetland.

Chairman Block: Substantially different?

George Logan: Substantially different.

Chairman Block: Thank you, please keep going.

George Logan: So here is another interesting thing that we found out. These are the numbers that we were given in the water budget, this is a table that we put together. What it shows is the numbers of the existing conditions and the proposed conditions of acre feet of storage. They determine that the wetland has X amount of feet of storage, I think they said it was about three acre feet of storage, which means that is when it is overflowing through those two channels that we were talking about. That is the total storage, that means it is full to the brink. Actually it is full when the water is passed over the wetland boundary in a couple of locations, that's how full it is. What I did is, I computed the difference, and then the percent difference, and then I took their two graphs and I put them together so that you can see. So, based on what they gave me, this is again, we are missing the ground water amount which is the question mark, just from a surface water perspective, for a dry year, thirty-five inches instead of the forty-five or so, we see differences when it comes to August, you can see the percent changes here, they are all, even during the early part of the growing season there is even 23,24,26, close to 31, and these are cumulative, so that tell how the storage is going up and down and what is coming in, except for the ground water flow. When you get to August and September, things kind of get interesting. July, 45 percent, 76 percent, 140 percent, 945.8 percent more, and you can kind of see that from the graph, the red line goes haywire, that's where it is overflowing. I don't like this at all. One would say, well, you know, a little more water, what's, why is it going to hurt the wetland. Certainly the salamanders will love it, they will have more time to come out. We already have a robust population of salamanders, they are doing just fine. The other things we have to worry about is what that is going to do to the swamp cottonwoods. Which, a lot of them are growing right at the interface between the buttonbush, which is the too wet, and right at the edge. Now if this becomes more flashy, where the applicant is going up and down and the hydroperiod is extended and the depths are deeper, those are some of the factors that you look at, I believe that you are going to lose these swamp cottonwoods. They will start dying back, the movement won't be as good, it will be stressed, and right now because of the fact that you have a significant ground water component legally, that's keeping it sort of on an even keel so that you don't have the flashy marsh. Yes, we have seen some, some dry periods and some wet periods, but that is besides the point, and this is of course a dry year. What would happen if we put the normal year here? These numbers would become even bigger.

Chairman Block: So what you are saying is that you believe that the proposed subdivision will flood out the wetlands.

George Logan: Yes, too much surface water coming in, which is flashy, which comes in quicker, and not enough ground water, which is what this wetland is used to. This is a ground water depression.

Let's talk a little bit about pollutant loading so we can have a relation to, the pollutant loading. You know, there was a lot in that letter that Dru Associates put together, again, it came the same day that I got the water budget, I think it was Wednesday, and it was I think three or four pages, it had some tables, they sort of revised the pollutant loading estimates based on some information that I had given them, and I will explain how this works out. Basically what has happened, it was a study that was studying what is happening as far as vernal runoff is concerned. It was done back, published in the '80's at some point, and what they did was they went all around to different states, south not so much, central, Washington area, metropolitan area, up here in the middle of our country etc., and they were able to do a number of things, and one of the things they wanted to do is see what is the concentrations of pollutants and what kind of pollutants are coming off various land uses, so if you have a watershed that is mostly forested, they even looked at that. Residential versus commercial versus industrial, some other things, highways, and they came up with some pollutant concentrations for various metals, nutrients, sediment, COD, BOD, a bunch of other things, and the reason was is that it was part of an effort that was tied to the clean water act, which helped them to go to the next phase, what we called Phase Two which was tightening the screws, we're going to do best management practices, we're going to be careful because we are really polluting the environment. That was what had happened, and those studies have continued and every few years someone publishes a whole new slew of concentrations and those can be used to do a pollutant loading analysis based on how much water, the rain fall, the concentrations, the land use, it tells you how are we doing. Are we doing a little better? It doesn't take into account end of the pipe storm water treatment systems, but it does take into account the fact that maybe you might be infiltrating more water, you don't put as much fertilizer, you're doing some source stuff, but it's basically monitoring. So what we can do then is to take those concentrations and run through a model that has been developed and we ended up using the simple method here, Schuyler's method, it's been tried and true. There are other methodologies that I believe are slightly more robust but they are more difficult, need a lot more data. And what it does then, it tells you, okay, this is what your, this watershed that is going to your treatment system, your above ground primary treatment system, be it a storm water pond, detention basin, retention basin, whatever it is, the ones that are supposed to be put in there to clean the water out, it tells us what is coming in, and then we can go to another source that has been studying the inflows and the outflows for detention basins and figuring out what these basins have been doing for pollutant removal operations, so how much, how much total suspended solids is a storm water pond? There are some studies that have been done, the University of New Hampshire Storm Water Center, The Central Watershed Protection has done a bunch and they come up and say, okay, if you do these things and this is what we think a storm water pond is so we they starting to standardize what a storm water pond is, and that is why we come up with the 2004 Storm Water Quality Manual, so we can all go to that book and say, okay, what are you producing, what are you doing here? Oh, this is a storm water pond, okay, a storm water pond, you flip there, well, storm water ponds, standardized should have this, this and this thing, right? Yup, we've done that. Okay, so if it is done that, then I know that I'm going to have 79 percent removal, it could be less, it could be more, but that's the median. So you can then calculate the load that is coming in, take out, based on the efficiency of your best management practice or your treatment train, because everything in the series is taking something out, so your sweeping is taking ten percent and your catch basin with (inaudible) is going to take ten percent, it all kind of adds up. Then you might to your hydraulic dynamic separator and depending on what hydraulic dynamic separator you have and whether it is on line or off line, you might get anywhere from twenty-seven percent to sixty-eight per cent or more, depending, and then you go to your final best management practice, so then at the end of the pipe, it says, I have eighty-eight percent ss removal, okay, so now you know, and not only that, but you know that you have 643 pounds of dirt that is leaving the detention basin, because what was coming in before was 3,892, I'm just making up a number,

but that is kind of what it is, and you can do the same thing for the nutrients, for the phosphorus, the nitrogen, the metals, the COD, BOD, and then you get an idea and you can look at concentrations of things that come out, kind of do some comparisons, and be able to say okay, I think it's going to be fine, or it's not going to be fine, for this reason, you need to add a little something extra. That was what I was hoping for, and unfortunately, that was not what I got.

Commissioner Igelski: Am I correct in that you have just been talking about suspended solids?

George Logan: Suspended solids, I could do the same for total nitrogen, for total phosphorus, for the metals.

Commissioner Igelski: Is that then referred to as dissolved or not?

George Logan: Well, okay, we are going to get to that.

Commissioner Igelski: It's one thing to be able to remove suspended solids.....

George Logan: Suspended solids are not dissolved. Okay, that is physical stuff, and it's anything that is one hundred microns or less, it's basically fine sand and so.....

Commissioner Igelski: But we get road salt that dissolves in water.

George Logan: That's a different thing, yes, so you want to look at those, you look at Clorox, you want to look at some other things, and I will point those things out. Let me finish this, and then we can get into that.

So, what I asked for is not what I got. We are definitely a step closer, and there are four things, three things that need to be done. First of all, I looked at the calculations and again, I could have done all of this myself, I do it on a regular basis, you know, there are some towns that I work in that I cannot have a net increase of phosphorus coming off of my site. It's (inaudible) extortion. It's almost impossible to do that, I'm thinking of Lake Pocotopaug in East Hampton. The problem is, I didn't want to do it, I wanted the applicant to do this so we wouldn't have an argument that I did it and I skewed the numbers one way or the other. I wanted to give him some information, look at these tables, do this, then we can all talk about what it means at the end, so at least we are not talking about how we get there, we're just talking about what is left. The computer runoff coefficients are high, they are incorrect. They are too high, you are going against yourself. The concentrations for metals are incorrect, they should be micrograms per liter not milligrams. Again, you have hundreds of piles of metals, and they are not there. Then there is this arbitrary reduction of resulting loads by fifty percent, so, okay, this is what we get, we think we're doing at least fifty percent, no, I want to know what the model says, take it to the nth degree. So you know, you start with this, you pass it through your best management practice, your series, you end up with this. Now we can talk about the this. So, I made a command decision here, instead of going through this and some other things that were a result of you know, some things that I think are in error here, I had like two paragraphs to talk to you about. There are some other things that are in that particular report that worry me, but until we get the pollutant loading analysis correct so that we can talk about, so we can all agree on what that means, okay, what does that mean, to have 11.2 pounds of this being discharged. Now, storm water issues, I want to get a little into the storm water issues.....

Commissioner Sadil: Could I ask you a question, which one is the most alarming one, you talk about the phosphorus, the metals, but what is a good situation, what's a bad situation. You said you are requesting some of the co-efficients that were used to figure out units are not correct but.....

George Logan: I think they are actually going against themselves, they are showing more stuff than is actually there, I have some issues with some other things, but, all of these are important to look at, because they all interact with the biological environment. Sediment does something, nutrients do something that is different, and sometimes the metals are toxic. Some best management practices will take things out to a certain degree, but there is all this stuff that is left, there's no system, and consequently, no matter what you do, you are always going to have something that is coming out, that is more than what was there before. It is what it is. Let's digress a little bit to talk about the nuts and bolts of the storm water management system. I can take a break any time you folks, I'm probably going to go for another hour.

Chairman Block: I do think then it's time, ten minutes please.
Let's resume.

George Logan: I'd like to spend a few minutes talking about storm water quality from the proposal that was put forth. Since November I've been asking some questions on storm water, there was a whole bunch of them. The biological ones were answered, the storm water ones were not answered directly, they kind of went off on a tangent, so I never got some direct responses on my of these questions. So I took a second look, and if I had the answers I would be singing a different tune I suppose, but if you look at the storm water management system, it's got all the nuts and bolts that are supposed to be there. It's got good pre-treatment, hydro dynamic separators, maybe not the best one, maybe it should be off-line, it's got some sweeping, that's put forth and we come to the basin, say water quality basin number three I'll talk specifically about because that is the one that I have the most concern for, but what I'm going to say about this also applies to all of the others. When you have a sensitive resource and an area like Wetland Two where you have a limited watershed where things tend to accumulate and there is no through flow, there is not a lot of dilution from a small watershed, you need to pull all the stops off, you need to take the suspenders, the belts, but the most important thing that I, that you need to do as a start point, is since we do have that book, that tome that we call the 2004 Storm Water Quality Manual, I know it's, we love it and we hate it admittedly, we all love it and hate it because, I'm not a designer but, if I said I was a designer they would take me away like this, Consumer Protection would say its like doing engineering without a license, so I can tell you what I think, but at the end of the day the engineer has to design some of these things. So you go to the manual and the manual and the manual says, like I said before, you have these options, you can do an extended detention basin, depends on what the soils might be, you can do an infiltration basin in some area, maybe you're limited on the amount of road you have and you want to do a straight retention area, maybe you even want to do a submerged gravel wetland, there are all kinds of options that you have. But what you try to do, the manual has given you components of each of these designs for a purpose, and the purpose is to ensure the longevity of the system, if the system can do very well for pollution renovation for your stated goal, that it's, if not maintenance free it's close to that, longevity, etc., and all of these components make sense so one of the questions that I asked early on, one of my questions was, what is this? I know that in the plan it says detention basin, and then somewhere down the line I heard that they were calling it an extended detention micro pool, pond which is one of the things that you find in the manual. And so, I started looking at it critically and I don't want to get into too much detail, but what I want to say is that what they are proposing is, you cannot match it with anything that is in the book, so if you call it an extended detention micro pool, well, he should go there, so I put a few things and this doesn't comply. There is a table there and it says okay, for these storm water ponds, including the one with the micro pool the fore paths need to be curvilinear, well they're not curvilinear here, we have to have a long path through this basin. Sediment fore bays are not four to six feet deep, they're, well now that they have some berms maybe they are a little deeper than before, which again I haven't seen the revised plans on that, but they are supposed to be four to six feet deep so that you don't have (inaudible) suspension, that's what sediment fore bays are supposed to, it's very important. Then, if you are going to have micro pools in the design they

need to be three to six feet deep themselves and the fore bays don't count for that, you have to have a micro pool somewhere. You don't have that in the extended detention basin. You have a flat area, it has a pipe more or less at the bottom, and the water comes up and there is a little orifice and it meters it out, which is all good and dandy but if you are going to go the extra mile and call it an extended detention micro pool, let's see some micro pools. Micro pools have an extended aquatic bench.

Chairman Block: Excuse me George, are you talking about the basin to the north of the wetlands?

George Logan: Yes, number three. So what I'm coming down to, and there is a list of other things that I could go into and I don't want to do that, that's not my intention to design this thing, all I'm saying is that in order to get a pollutant removal efficiency that's high, you need to be able to design these features into your storm water management basin, so that you can say that it is high, so for instance, one of the things that I did, is and I had to do some calculations somewhere, attachment D, all the way at the end there, right after the table with the green lines, what I did, I looked at basin number three, discharging to Wetland Two, and I did that pollution renovation calculation to see what I thought each, this basin would do if it was truly a stone water, extended detention micro pool which it isn't still, but it could become one, and let's assume it is, and this is what I got, 83.7 ss removal, that could go up, we got 71 percent total phosphorus, that's not bad, 35.6 percent nitrogen removal, not so good, and then we have zinc at 53.2 removal and copper 39.6 and they could probably do some things there too.

Chairman Block: Are those your calculations?

George Logan: Those are my calculations. Because what had happened, the applicant had provided their own calculations on TSS removal and they came up with 35.9 percent and I thought that was too much. Here is the reason for all of this discussion on removals. Let me show you a table.

Commissioner Paskevich: Could you please refer to the book and what page we are on?

George Logan: This is not a page, it's attachment D and, which is the water quality.....

Commissioner Paskevich: Where is it, the water.....how do we find it?

Chairman Block: Is that the blue page, storm water quality?

George Logan: You will come to a table that has some green lines through it.

Chairman Block: George, are your conclusions based upon, if they had designed this feature the way it was supposed to be?

George Logan: Correct, so I'm saying they are going to design it the right way, because I have to give them that benefit....

Chairman Block: But they haven't yet.

George Logan: But they haven't yet. And there are some issues with specifications, I mean, I could get awfully detailed here but I want to look at the big stuff, if you would like me to get detailed I certainly can, I can tell you that the seed mix that they are proposing there doesn't belong there. It's not going to do anything, it's not going to grow. Most of the species are upland species, so they are going to have a wet basin there. Anyhow, nuff said, table number one,

something you have probably seen before is a Soil Textural Classification, it gives you the classification on the left side, and it gives you a diameter range in microns and you can see, 100, look at 100 which is the third line from the bottom, a hundred microns is the cutoff, most people believe, for total suspended solids. So you have total suspended solids that are very fine sand, silt and clay that things that are fine sand, medium sand, coarse sand, those are not suspended solids. The reason we talk about suspended solids is because studies have shown that a lot of pollutants absorb to suspended solids, so you are going to have a lot of phosphorus, a lot of nitrogen, some other metals, COD, BOD, so what these have, instead of a surrogate pollutant that if you do very well TSS then you are probably doing as good as you can for some of these other things, which doesn't mean you are necessarily doing all that you can, that's why, if there is a guideline that you meet to achieve at least eighty percent TSS removal. Now, the problem with TSS is, when you get to the silt and the clay components, those are very fine particles which means they resuspend easily, which means they don't settle easily, so if they settle, they can re-suspend and that is why you need things like forebays for instance. This proportionate amount of pollution that is harmful to the environment is associated with the smallest fraction. So it doesn't matter if you necessarily in many cases take out eighty percent of the TSS because the twenty that is going through has most of the pollutants associated with it, in this proportionate amount, so let me go on and show.

Commissioner Sadil: Meaning that the smaller particles are the dangerous ones.

George Logan: They are the dangerous ones and so that is why we try to do as good as we can, because the better we can, the more of those fines that we pick up, but at the end of the day, we still have fines that are going to get through, and then we have to ask the question, does this matter, does this mean anything? I mean, is it fine to have fines? Here's another table, from 1991 or 92, Bulletin No. 11, and what this tells you is the, shows you the fraction of total, percent by weight categories in microns, so you have the fine stuff in here, the medium stuff here, and then more, what it shows you is, for instance if you go down here, and you look at phosphates 56.2 percent of phosphates associated with 43 microns or less which is basically silts and clays. That's what that does for you, just another way of looking at it.

Commissioner Igelski: Are you saying that some dissolved pollutants attract to the suspended solids?

George Logan: No, I'm getting to that. I know that you had that question before.

Chairman Block: You're saying this is particular pollutants aggregating by particles....

George Logan: Or pollutants that are through chemical bonding are absorbed.

Chairman Block: So that the fine material is acting like the precipitating factor.

George Logan: Exactly. So it's not a bad thing, that's why we have been talking about TSS for all these years.

Chairman Block: If you can catch them outside of the wetlands.

George Logan: Correct, and sequester them and work on them so that they can be turned into something else. Table 3 what it shows is the percentage of suspended solids in urban runoff particle size categories. So what this does, in yellow there, it shows that things that are silts and finer, very fine sand, silts, and clays, seventy-eight percent, at least with this study of the pollutant and suspended solids. Go to the next one, and we get into Metal Distribution versus particle size in Urban Runoff and you see these are the metals. Metals are quite toxic in very small amounts

and some of them are natural in the environment, but when they reach certain concentrations they become pretty toxic and certain organism react differently than others. If you are a cocopod, you don't like zinc. You give me the same amount of zinc and I'm thanking you because of my cold, so again, what this is showing you is that the metal distribution, metals become more concentrated that are associated with suspended solids. Again 100 is your cutoff, when you get down to less than ten microns which is basically silts and clays, and this proportionate amount of metals, because there is a lot of surface, a lot of absorption, a lot of chemical bonding.

Commissioner Clark: What are the common sources of these metals in an average development?

George Logan: A lot of that has to do with complete combustion, tire wear, vulcanization of tires for instance produces a lot of zinc into the air, and then you have another thing to consider, atmospheric fall out. They are burning some stuff out there, when it falls on the forest floor, that's a different thing, but when it falls on the pavement and washes off to somewhere, and concentrates, that's a different thing. A lot of combustion stuff and industry puts stuff here and around so these are, a lot of them, they are all in the environment, but we as humans, by the things we do, we tend to concentrate and produce more of them by what we do, as with the example with zinc, and that was why it was a concern for these synthetic fields because they were using tires and they were making these synthetic fields, but then there was a zinc export from those and if you were next to a sensitive resource, that would be an issue. So, we have to always look at these things. The point that I'm trying to make is that the finer fractions are the ones that are associated with the pollution.

So now we come to the solubles. Not all pollutants are (inaudible) or not all pollutants have a chemical bonding with TSS, so here you see the typical distribution where you see the percent particular fraction on the white side and the percent dissolved fraction on the yellow side. Take TSS, well that's an easy one, percent particular fraction 100 percent. There's no dissolve, we're clear with that. Now when you come to zinc, we were just talking about, 35 percent of the zinc based on this study, which is a compellation of a lot of studies, is dissolved which means, you aren't taking it out with TSS, it's going through, there are other things that have to work into that to take it out. It's going to have to be microbial degradation for some things, has to be photoanazation for other things, it has to be hydrous for some things, it's a bunch of things, a bunch of processes that happen. So this will become hopefully more clear. I just showed you, all right, this is the dissolved fraction for various metal concentrations so you can see the percentage on the right, and for instance, zinc in this study, one study was 14.4 and another one was 56.3 so it depends on what study you do, where you are in the country, what the conditions might be, the numbers go up and down. A few ph's up is one thing, a few ph's down is another. Bottom line is that there is a tremendous amount of dissolved pollutants that can need extraordinary things for you to take them out. Also a lot of pollutants are associated with a very fine fraction which is also very difficult to take out, so here's the graph. So you see, 246 microns is pretty large. So the red is what is associated with that, but more important one I wanted to show you is this one, so cadmium is more dissolved than not, same thing for copper, copper is notorious, that's why we use it for certain things. So the bottom line here is what we feel is going to happen and we can go in and talk specifically about organisms that are likely in Wetland Two. Algae, cocopods that salamanders feed on for instance, and the list goes on, we have listed some of these in here, now hold on, I want to show you something else. The point is that we concentrate pollutants into the environment. This is interesting. What is this showing you? This is your detention basin number three we've been talking about which has changed a little bit, I think the berms have been added, but what I did is I went to the level spreader, and I took a line every fifteen feet or so, twelve feet, and followed the contour past it. What happens is that you can't get the idea that this humongous level spreader and the water is leaving it, and by the way it's going to be interesting to be able, 260 feet it is, right, of a level spreader on an undulating topography and make it level. That is going to be a Herculean act to start with, but it's probably not a bad idea. The problem is that the

land down gradient tends to want to concentrate the water back in, so what you find out is that most of it is going to end up concentrating here, and most of it is going to end up concentrating in here and then following pathways back into the center of the wetland, so it's not like you have large portions of upland soils in the buffer that are acting to further polish the water, and if this is running off, some of it is going to infiltrate, depends on what storm you are talking about what the conditions are, especially if the outer ones keep going, so you are going to have a bioaccumulation of toxic substances within these wetlands and maybe it's going to be in certain areas more than others, but it doesn't matter, it's all in the wetlands.

Commissioner Sadil: Is that because you feel that the extended retention pool of that design does not take out these toxins at the small particular levels?

George Logan: No. Here is the point that I am trying to make, what I'm saying is that when I did my pollutant loading calculations and again, I'm sure the applicant can look at them and say, hey we can do a little better with this, okay, go for it, the issue is, even if they did all these things there is still going to be stuff that is going to be leaving this basin, and it's going, over time, it's not going to happen in a week, or two weeks, or three weeks, it could take months, it could take years, but eventually it's going to happen, because the half life of these things is very long. They don't go anywhere, and I talking more now the organics than the pesticides for instance. I know there has been a prohibition on pesticides. How are you going to control that? How are you going to control that, I don't know. Maybe you can control it on a golf course because it's an economic incentive.

Commissioner Sadil: So even the best system in the world.....

George Logan: Even the best system in the world is still going to leave some stuff in and depending on what your situation is down gradient, it might make a big difference or it might make no difference, so back to the lesson.....

Chairman Block: In this situation?

George Logan: In this situation, that's what I'm saying, back to my point originally because this is a closed system, it's an embayment, it doesn't have a very large watershed, doesn't have a lot of evolution potential, everything is coming in here and it's settling, the impacts are going to be disproportionably more that if they were in Wetland One which washes out.

Chris Greenlaw: Mr. Chair, I just want to clarify for the Commissioners a couple of things. Now you have done a pollutant loading analysis for the wetland basin two, the question is, are you also stating that the applicant has not provided this pollutant loading to you? That would be a question that we would all have because the Commissioners..., the Commissioners need to have a feel for a fact finding so my question is, you have done the pollutant loading, has the applicant given you the pollutant.....

George Logan: No, I have not done the pollutant, what I have done is look at the pollutant loading analysis and I said, hmmm, some issues with this. I have listed them in the report and then I figured something that I could do because I had seen, the engineer had provided a TSS pollutant removal capability which I did not agree with, I thought it was a little too large. I said, why is it too large, I went ahead and I documented what sources I used, I went to the University of New Hampshire and well if you have this, then you take this much out, now if they do an off-line hydrodynamic separator they are going to get more TSS removal and that's good when it's comes to TSS but then I did some of the other things, separators are going to do much to dissolve stuff, but what I'm saying is that even if they did all of these things, which they should, and got this up to snuff, so that I can say, yep, it's the best they can possibly do, there are still

going to be an export of pollution from this system, enough so, so that when it gets to the wetland over the long term, it's going to have an adverse impact on this particular system. If this was a flood plain wetland, which has a high nutrient status for instance, a lot of through flow during certain times of the season, I wouldn't worry about it, but I'm worrying about here because this is more or less closed system. Does that make sense?

Chairman Block: Again, one question. Let me try and make it simple for myself. We have a closed system, you have a sediment basin that does not meet the standard design criteria but you extrapolated the data that they gave you and applied and reduced it by applying to other samples and it still comes out to be a load that you feel is unbearable by this wetlands.

George Logan: Yes, I mean.....

Chairman Block: Is that correct?

George Logan: That's correct, so I have given them the benefit of the doubt, they can do as best as they possibly can because they can, it's simple engineering, maybe it's doing this or that, but at the end of the day, even if they have the best system here, there is still going to be export of toxicants which will accumulate into the wetland and have a long term adverse affect.

Chairman Block: Okay.

George Logan: And some of these receptors and they are in this particular wetland are quite sensitive.

Chairman Block: And that comes back to my, I hope my last question and that is, if we were using a crystal ball, you said, over time, are you talking about years, decades, centuries, before you would expect to see a substantial detrimental affect or is, what time period are you talking about.

George Logan: I think we mentioned this in here, basically the way that we have backed up into this information to give you an answer, is that people have done studies of detention basins and gone in and have found out what is there, and what has accumulated and some of the stuff is pretty toxic, and so then, ten, fifteen years.

Chris Greenlaw: If you could clarify for the Commission as well when you speak to pollutant loading or the sediment basin not being of a particular size or type to clean pollutants, can you clarify for the Commission when you are talking about the treatment train as it relates to the TSS removal which is an engineering component which the DEEP has standards for, versus the pollutant loading which I believe is a bit more nebulous to everyone here. In your opinion of the data before you, going back to TSS, I believe through engineering, are you making a statement that you, well, you're not qualified to make the statement but you would like to see enhancements to the TSS removal treatment train, is that what you are saying? That is the first question. The second question for the Commission is, these pollutants, when they are proposing their micro extended pool, are you saying that they can make modifications to remove these, you mentioned a couple different ways that this could be done, either through photoiozation or micro biodegradation, can this be achieved through the basin, are you making any recommendations.

George Logan: These are processes that are happening in any above ground storm water basin, some better than others obviously.

Chris Greenlaw: But you are saying that this can be achieved.

George Logan: Yes, what I'm saying is I'm giving them the benefit of the doubt, if they pulled out all the stops and did as best as they can, and of course, why wouldn't they want to do that, but still, with the best that they can because of the fact that there's nothing they can do to take everything out, because of the fact that this particular wetland being what it is, that over time, ten or fifteen years, these things will continually concentrate to the point where there is going to be an adverse impact and for some, for some critters in there it is going to happen fairly fast, for others, it is going to take a longer time. The salamanders wouldn't mind it, maybe they will. The cocopods that they feed on might mind it sooner than later, so it's a cascade effect of an ecological degradation as time goes by where one after the other the species in the food chain get impacted to the point where you have something degraded, something completely different from what we have today.

Commissioner Paskevich: The question beyond the salamanders and the cottonwoods, to what degree would those be degraded based on what you just spoke to regarding the amphibians.

George Logan: I would like to hold that question for a little bit so that I can have Sigrun who is more of a plant ecologist than I am to address that. What I would like to do to finish up what I would like to say, and then let Sigrun say, and then I will come back and sum up. I wanted to talk a little bit about geohydrology and what our soil samples showed us.

Chairman Block: Before you do that, I just want to clarify, you said ten to fifteen years, you were at the same time talking about the animal life, is that same time span for the plant life.

George Logan: Some plant life. Some plant life is more sensitive than others and we've seen examples over the years where you had a particular pollutant, we've been called in to see spittles, hoping remediation for spittles and assessments and we notice even way down, certain species are more sensitive.

Chairman Block: Any idea of where the cottonwoods come in that.

George Logan: Well, I'll let Sigrun talk about that. I think the hydrology issue is a lot more clear to me, maybe not some of the other things. So the last thing I would like to do is talk about our physical soil testing and you have seen the pictures and the samples and, in the report it's starting with Section 6 and then I'm probably going to go where that data is. It's attachment G and also keep your finger in attachment E which I will talk about next. The soil sample was quite interesting I thought, it did confirm, both from the testing and from the actual looking at these samples is that there is a high probability that there actually interaction between the surface water and the water that is in this basin that is on top of bedrock that is at least eight feet deep. It's quite interesting to me because I've never seen anything like it, so if you kind of string the dots, if you will, what you see, is you see a wetland that has a very mucky, twenty-eight to thirty inches mucks, highly organic, some of them are partially decomposed, not completely decomposed and then you hit this layer which is that glade layer, it's, that was core one, which is a silty clay loam, and then you punch through that and you get into this area which is sort of a emulsion of both horizons that are mineral obviously we went through them and picked some of them up, and then these are organics and a lot of water. So core one was the silty clay loam, and core five which was what we looked at first is a clay loam, and then if you look at, go back to Section 6 and look at, the bulk density, the bulk density is how dense is this material? Is it compact, is it a little loser, for C-1, which is the one that we found in the middle of the wetland the bulk density is .562 grams per centimeter squared, well, for five, the clay loam, the first one is a silt clay loam, this is a clay loam, it's a lot thicker and the bulk density is .867 grams per centimeter squared. A lot more dense, so that is what we were looking at the edges and when you go into the middle, it's different. We calculated veracity there, of course this doesn't necessarily relate to permeability but what it does tell us, I think is that there is the high potential that in the middle of that wetland

that there is the upwelling that I was talking about, in a seasonal way. Now, one of the things that we have said from the beginning is that we would like to see piezometers because a piezometer can tell you, if you stick a piezometer in the ground, deep, and here's the surface of the water in the wetland, just one piezometer, you can start with one, you can some things with others, just one, and you get a rain, and you go back and look at your piezometer and you look at the level and the level has risen in there, above the level of the surface of the water, well, that means the water is going up, but if it goes the other way, then you know that you have recharge, so I wanted to show you an example. Here's another wetland which was in a southern environment, it was Holyoke basalt trap ridge, trap rock area and it had this wetland, we'll call this Wetland A, we should start giving them names. It was flooded, it had vernal pool characteristics and we were quite concerned, I should say the Berlin Commission was concerned, I was on the applicants side, that we would, with the blasting that they were doing next door, close to this that somehow fissures would open and drain this thing out, sounds familiar, and we would some how deny water to it, both surface water and ground water and dry this completely out. It's completely nice. So what I did was, I went to the middle of this wetland and I did more or less the same thing that I did here, it's a little different, S hole in the middle of it, and I went down, and this is the first crack at it, pretty wet, and the second series of photos, it starts to get a little drier and a little blonder, it's still saturated but only in the upper portion, and then I get into this stuff, it's a CD horizon, a benzoic horizon, it's moist, it's got prominent models and it's a very firm silt loam and based on that analysis and with my hands in the field, and then we go farther down, we've got more horizons, it's getting drier, thirty-six inches from the surface very fine sandy loam, very firm and you can see how bright it is and then go further down and then we have a slightly moist to dry horizon, it's getting a little wetter and then finally, Cd4 horizon, moist at about 46 inches from the surface, and this is my auger buried. So the Commission was concerned and I went out there and I'm like, okay, this is clear, this is a perch water table. This is a wetland which doesn't have any up from ground water, even though there is a hill next to it, steep with a slope that goes up away, bedrock exposed and I have another slope on this side, but I'm convinced that it is a perched water table, and I do the soils and they are so bright, which means there is a lot of oxygenation, there is not a lot of water moving through here. The water sits at the top, and so, I'm just a wetland scientist, so this is what happened. The Commission had a geologic impact assessment and they appeared as (inaudible) basalt, often having columnar joints, sounds familiar, site hydrology. I had certainly forgotten about this, it's the same firm as Mr. Slaybacks. The surface water hydrology on the property is dominated by a shallow, perched water system, recharged primarily by precipitation infiltration and runoff from upland areas to topographic depressions that form the two onsite wetland features A and B. Now, so now, here we go, on April 18, 2012 LBG installed a piezometer in Wetland A to better understand the wetland hydrology. This data confirms that during dry conditions the wetland system does not receive significant ground water recharge from the surrounding till, etc., so, the point of the matter is, it was important at that point and for us to figure out, and the reason that I am using this example, because I know there is probably a question, is to show that, what the difference is between a perch water table and what we don't have a perched water table here. The geology is similar but the soils are quite different and a piezometer was used in this particular case by LBG to show indeed that it was a perched water table. Same thing could have happened here, that's the whole reason, and I just wanted to show one picture. This is what this looked like. You can see it has a limited watershed of about 8.4 acres, it's a slightly smaller wetland than we have in our case here and this is what we ended up doing, the Commission was very concerned. Redevelopment 8.4 acres, post development 8.04 acres and we had a little loss of the watershed and then we, they told us to lose a little more of it, and we did before the final. That's that.

Commissioner Sadil: I take away from that that you proved the soil sample type as a perched water basin.

George Logan: For the one in Berlin, not here. Here it shows is that there is enough permeability in these soils that are very wet so that during certain times of the season your water up wells into the wetland and certain other times of the season it goes back up, so ground water is very important in this, for that one in Berlin it ain't important at all, it doesn't make any difference.

Commissioner Sadil: Because there is no ground swell up.

George Logan: Exactly. It's completely isolated from ground water.

Commissioner Zelek: What did Berlin do again, you said something about preserving the watershed so.....

George Logan: Berlin was very convinced, the Commission, that the only way to make sure that we didn't mess this wetland up, which because it was perched because it had limited watershed on 8. whatever acres, that, they wanted to be conservative and they said, you know, we had several plans, we kept moving away, moving farther away from the wetland until the final plan which we were barely touching the watershed. They wanted us just to stay out of the wetland watershed completely. And therefore we couldn't possibly have any impact because our development was on the outside of the watershed.

Commissioner Zelek: That's in their purview to do that, it's outside of the of the hundred.....

George Logan: Yes, they decided that if we were taking any part of that particular watershed, we're not talking about discharging water, they were more thinking hydrology, if you take any of the surface water runoff that goes and feeds this wetland you are going to dry it up, you are going to make it something different. So we ended up going to the wee edge of this watershed.

Commissioner Zelek: So we're looking at a ground water depression?

George Logan: Yes, it's a little different situation here. I have to admit that, but it's similar.

Commissioner Zelek: How would you classify the small vernal pool to the east?

George Logan: Wetland Number Three?

Commissioner Zelek: Yes.

George Logan: Marginal.

Commissioner Zelek: Marginal, but is it a perched wetland or is a ground water depression?

George Logan: I think it's probably more perched than ground water. Sigrun has an opinion, she'll probably tell you.

Commissioner Sadil: Relative to the application here, what is the impact? You are saying if the development is going to infringe on this upwelling or.....

George Logan: Coming back to the beginning of this discussion, my fear is that, and we didn't get the water budget but I have reasons to believe that there is a significant amount of ground water contribution that feeds the hydrology of this wetland. Under the current conditions we are losing a significant, we haven't quantified it, but I can tell you, it's going to be significant just by seeing how things are being moved around. Things that, water that infiltrated the ground is being diverted, I mean, sorry, it's being changed into surface flow, and/or diverted, no way.

Okay, I think there is one more thing on the global thing that I would like to talk about, and this is one where there is a significant amount of disagreement by the two sides of this issue here. I think that ERT has opined on this, they have an opinion, we have a similar opinion. We feel that having a significant impact on the biota, the vernal pool biota of this wetland is going to have a physical and chemical impact upon this wetland because as I told you before, these biota are part of the food chain. They break down stuff, they change the chemistry to make it what it is today so that all the other critters, all the other biota that is associated with the flora and fauna, that's part of the equation. You change that, and you will have a significant impact to the wetland, and that's the case down from the preserve. I always get confused if that is Riverbend or something else where it was basically, went through court and the court said there was evidence that the diminishing of the particularly if you looked at the keystone species, would have a significant impact on the particular vernal pool environment, physical impact. So here's the data that is out there tells us that and we have used the Calhoun-Clemens methodology for 2002 which basically the best management practice which is I think, has some good reasons, some good science behind it. I know we have argued it, and I'm sure everyone has argued it, but I think at the end of the day, if you don't have data to show something else, then this is what it is, and the only way that this would work, for this particular vernal pool is that if all the brown that you see there, that is forty percent of the 750 foot critical upland habitat for this vernal pool, if all that brown didn't, have a disproportionate lesser amount of the critters that go to this vernal pool than the blue area. We don't know that, and I have reasons to believe that actually the diverse is probable. The more the critters go east, the higher elevations, the soils that are probably (inaudible) micro climate than going down to the ravine which is going to be cooler, and some other reasons that I could go into, but at least you can say that fifty percent, or forty percent of the critters can go there, and if you lose forty percent of the critters, you're going to lose, you're going to have a chemical impact, physical impact on the food chain for this particular wetland. So the current model is that you go twenty-five percent or less, so this brown, if you were to completely go with that model, this brown would have to be twenty-five percent.

Commissioner Clark: Twenty-five percent of.....

George Logan: The brown would have to be twenty-five percent, so there is 57 acres, and now the brown is about 23.3, that's 40.5 percent, plus or minus...

Chris Greenlaw: If the circle was a 750 foot....

George Logan: The circle goes out from the blue and goes all the way around, right, and it goes from the edge of the flooded area, as seen on the map, as seen on one of Dr. Abrams figures. You know, we can talk about some other things, but the global thing is that I believe and all of the other best management practices that I've look at, and I've included a few and if you go to our sister state of Massachusetts same thing, as a matter of fact, if you go to the Storm Water Quality Manual 2005 and I have included that in the appendix because I was told that this whole thing about decoy, for these ponds being decoys, is something that we have kind of made up. You go to the 2004 manual, that's one of the guidelines that they have in there. You put in a storm water pond, they say, keep it 750 feet away from a vernal pool. Let's see, a hundred. Same thing in Massachusetts, the same guidelines, maybe it's not 750 but it's whatever envelope they are looking at. So...

Commissioner Zelek: Is there something I think, it's that Calhoun....

George Logan: Calhoun and Clemens.

Commissioner Zelek: These detention type areas should not be within 750 feet....

George Logan: That's what they say and then (inaudible) picked that out and put it in the Storm Water Manual and I have the excerpt there, and they say exactly the same thing. Keep it 750 feet away, and in general the comment and understanding, and this is like Vernal Pool Management 101, for Pete's sake, don't discharge storm water into a vernal pool. So, I can tell you that and go home, but I wanted to give you some reasons why these people have said that.

Commissioner Clark: So that we know that if the area is redeveloped the amphibians can't colonize.

George Logan: Yes, that's a desert for them.

Commissioner Clark: So we are missing forty-five percent of the amphibians....

George Logan: It's something, it's thirty-five to fifty.

Commissioner Clark: So could you tell me how the lack of those amphibians impacts the wetland itself.

Commissioner Zelek: Just one more question before Sigrun starts. Was it twenty-five percent would be acceptable?

George Logan: That's in the management practice, again, there is nothing perfect about 750 feet or twenty-five percent, so these are people who looked at the literature, the science base, and made some decisions and said, well, if we want to conserve vernal pools in our urbanizing environment and particularly ones, that are, this is what we need to do.

Commissioner Zelek: So this twenty-five percent of developed, but without any discharge within that 750 feet?

George Logan: That's one of the major principles, you don't discharge. If they are saying you keep your stone water basin 750 feet away, well, what does that mean? Well, it means that you are not discharging in it most likely. It would be very unusual to have a watershed that goes 750 feet away for this little jewel of a wetland in the middle of a forest landscape. Be focused, we just asked the question, if we lose forty percent of the critters, what happens?

Sigrun Gadwa: There will be less processing of the biomass, wood frogs and plankton and they process the functions that eat the leaves. There will be more of a pile up of organic mater that, pools will get less deep, that has the potential to impact the cottonwoods and the buttonbush, as over time the substrata gets higher and higher. I'm going to do just little bits and pieces which I noticed that George hadn't covered yet. With regard to hydrologic impacts, on the cottonwoods. A major thing is the effect on seedlings, and not the cottonwood seedlings, but seedlings of any species on the perimeter of the wetlands. If you have a, a wetland has to have steady, moist soil fed by ground water, that's good conditions for seedling germination. If you have frequently a couple inches of flooding covering those areas, and staying for a couple of weeks, the kind of thing you would get if you had more storm water discharge, the seedlings don't tolerate being drowned. Being covered with water for long periods. The cottonwood seedlings or other seedlings and the fact that we never had a spring survey of the wetlands, looking at the herbaceous species is of great concern. It's an omission in the application, that there are, at least a dozen rare species that could be at this site in the wetlands. I wanted to tell you that there is a detailed section of the cottonwoods, Section 8, and another one on wetland associated birds in Section 9. I'm not going to cover them in detail, or really at all, I'll just say, refer you to those areas, but I will say that from a wetland function standpoint this particular stand of trees is

especially valuable because it supports a unusually large number of different insects, about forty moths, ten or fifteen butterflies, and other beetles and bores as well,

Chairman Block: You're talking cottonwood?

Sigrun Gadwa: Cottonwood, yeah. Cottonwood, common cottonwood and swamp cottonwood are amazingly, support an amazing diversity of insects and they are used a great deal by songbirds as well. I've noticed that in my own yard as well, where I have cottonwoods, the birds spend a lot of time in them and we can expect the songbirds that Roy Zartarian has documented over a five year period, very diverse population of songbirds for an isolated area like this, I was extremely impressed that most of those spend time feeding in the swamp cottonwoods.

Commissioner Paskevich: I have a question about the song birds. Would part of their diet be the insects that the cottonwoods in attracting?

Sigrun Gadwa: Oh yes, very much so.

Commissioner Paskevich: How much, I'm not trying to ask for a figure, but....

Sigrun Gadwa: They exist on insects, and in the wintertime the woodpeckers eat the bark insects and if you don't have, and there is another point which is in Section 9, that if you don't have many different types of birds, or an abundance of birds because you have a higher noise level in the wetlands due to nearby development, which is what is going to happen, or a smaller forest all around, then you can have imbalances of insects, outbreaks of insects. You don't have this wonderful diverse bird population controlling it.

George Logan: Did you talk about the flashing hydrology, what it would do to the wetlands, what effects it would have on the swamp cottonwoods, but also to the ecology?

Sigrun Gadwa: Yes, the flashing hydrology in the spring would be interfering with seed germination and it's also, on a larger scale, it threatens the (inaudible).

George Logan: I think I am kind of wrapping things up, I mean, there is a lot of detail in here we could talk about, but the take home message here is that when it comes to vernal pool, to Wetland Number Two in the embedded vernal pool, based on what I have seen, from the data that I have seen and from my own observations, my own analysis, I believe that this particular development as designed today, now there could be some changes that could be beneficial, I'm not here to necessarily discuss those right now, we don't have anything on the table, but as this exists on the table right now, I believe it will be a significant impact on the hydrology of the wetland which is a physical impact, which has a cascade effect to the whole ecology of the system, and I also believe that the storm water that is going to be entering the system will have a long term detrimental effect on this wetland, and then of course I talked about what I believe would happen from the loss of the robust populations of amphibians which inevitably will happen here, and I don't think it's going to, we don't have, we don't have systems like this with this kind of diversity with development on two sides with this much amount of impact that we could go to and say, oh look, how robust, I haven't found one yet. I'm looking, I have some things that are kind of interesting in some areas, I have a subdivision that I did that has a lot of vernal pools, and so we don't have a lot of vernal pools here, this is one, and has an intact forest around it. My fear is, actually my opinion is, not my fear, it's my opinion and possibly my fear too, that the loss of this many amphibians will have a detrimental impact on the physical characteristics of the wetland. That's kind of where I'm at. I don't know if there are any more questions. I do want to say this, there's some housekeeping things, we had tried to also to explain and we have in the cottonwood section, that we believe the mineralogy of this particular area and it's important that the

cottonwoods need this kind of mineralogy to exist and if the minerals don't become available because they are sequestered by chemicals within the developed watersheds, that then will be a detrimental impact so we went and tested the soils and we took the samples to the soil labs at UConn. Unfortunately we had bad timing in the fact that the machine that they use to do this testing, and this is the only machine that we know of in Connecticut, was down. Their technician was going to come today, he's actually coming tomorrow, so they are not going to have the data until Monday or Tuesday at the latest. We still will provide it, I don't think we need it to make our assessments that there are things that we put into a developed landscape with respects to pesticides, with respect to nutrients, fertilizers and also salts, that can have a detrimental impact to diminishing the availability of these micro-nutrients for the cottonwoods. We have still yet to see, there was a revision that was going to take some water from detention basin four and bring fifty percent, we haven't seen that, so we can't assess it. If time permits, that and a few other things will continue to be assessed, such as maybe the pollutant loading analysis.

Chairman Block: George, to try and capitulate this because this is a closed watershed area, there is no substantial outflow, the development as proposed now in your opinion is going to alter the amount of water available to the wetlands enough to substantially change it's character and appearance.

George Logan: Not only the amount of wetland but, sorry, the amount of water but also the delivery, the mode of delivery of the water to the wetland.

Chairman Block: Okay, so the second thing is again the development as now proposed is going to alter the distribution of the water between surface and ground water flow in a method that will also substantially alter the appearance and constitution of the wetlands?

George Logan: Yes.

Chairman Block: And the development of the area within this watershed and beyond it, as utilized by the biotic components of the wetlands is going to be altered to the extent, the detriment of that biotic which will then cascade to alter the wetland substantially?

George Logan: Yes.

Chairman Block: Okay, and lastly, the soil chemistry as is necessary to allow the swamp cottonwoods to thrive is in your opinion, likely to be altered by the runoff of chemicals from the developed area, into the wetlands in a way that will cause them not to thrive?

George Logan: Likely, yes.

Chairman Block: And all of that is likely to happen within as short a period of maybe a decade or two?

George Logan: Yes, certainly within ten or fifteen years.

Chairman Block: And that is, in terms of a life span of a wetlands a relatively short period of time?

George Logan: Absolutely.

Chairman Block: Thank you.

Attorney Boorman: Quick question for you, I hope. Would you specify the harm that is going to be caused, the physical characteristics of the wetland in light of what the Chairman just asked you? What will the harm be for this particular site?

George Logan: Sure, one of the physical characteristics is the hydrology which gives the character. It's all about water really, the wetlands are wet environments, so if the hydrology changes it's going to change the physical characteristic of the wetlands, and everything is a cascade thing. Certain plants will leave, will diminish, will die, will be flooded out, other plants that are more weedy that will successfully compete against what is there now that is more unique, like the swamp cottonwood, will come in, and drive the cottonwood out if you will. We are talking about hydrology at this point, and then of course the chemistry is a similar thing.

Attorney Boorman: Stay with that specifically, is it likely that what you just described is going to happen if this plan is approved?

George Logan: Yes, it's more than likely. It's a reasonable likely.

Attorney Boorman: What is the ultimate result on the wetland in your opinion that will happen over the course of time? Will it survive, or will it not survive?

George Logan: You can still characterize it as a wetland but it's not going to be a wetland that is characteristic of the things that recommend it at this point. It's diversity, the uniqueness of some of the species that are there, the uniqueness of some of the animals that are there, those things, you are going to have a degradation of the ecology of this wetland as a result of the physical impacts.

Attorney Boorman: That degradation is of the physical characteristics of the wetland?

George Logan: Yes. We're talking about the water, we're talking about the chemistry and also to some extent the habitat itself as far as the physical characteristics.

Chairman Block: Well, not to beat a dead horse, but the physical characteristics of the land is going to change because of the additional loss of water, the inventory of plant life is going to alter, the inventory of animal life is going to alter, so it won't, it may still be wet, but it's not going to be this wetland and it's not going to be as diverse, and therefore as valuable as it is now.

George Logan: Exactly. When we assess the value of this wetland we said, it provides these functions. These functions were all at a high level, especially when we discovered the swamp cottonwoods and the uniqueness of this wetland went up an additional level, all that would change under the proposed development scenario.

Attorney Boorman: With all of the other stuff that you talked about earlier, which is the subject of your report which concludes on page 42, under Section 11, "It is our professional opinion that as designed the proposal will have an adverse impact upon both the physical and habitat characteristics of the site's central wetland (i.e. Wetland Two.)" Are you with me on that? So all of the stuff that you wrote before this and all the presentation tonight is based on the fact that all these different areas that you talked about are likely to happen to this wetland if this plan goes forward as it is designed right now.

George Logan: It's not a possibility, it's a probability.

Attorney Boorman: Okay, and all of these different area, for example, you talked about the water flow, surface water versus ground water, the issue that would be associated with that, that would have a substantial effect on the physical characteristics of the wetland?

George Logan: Yes it would.

Attorney Boorman: And that is a not a possibility, that is a probability?

George Logan: Yes, absolutely.

Attorney Boorman: Thank you.

George Logan: You're welcome.

Attorney Regan: Obviously we have just seen all of this tonight and we are not going to respond now, we will respond Tuesday. We will prepare our response in writing and we'll be back Tuesday night to make a full presentation. There are a couple of pieces of information which George showed tonight which are not in the book, we're going to be requesting copies of those, and that's all I have for now. We will be prepared to respond Tuesday night.

Chairman Block: Just to make sure the logistics work out. Will you e-mail George the.....

Attorney Regan: We'll tell him tonight and will follow it up with an e-mail, yeah

Chairman Block: And you will copy that...

Attorney Regan: Yeah, everything will be copied to Chris.

Chris Greenlaw: Mr. Chair, while we are on the topic of a meeting for the benefit of the public and all parties that are here, this room will be utilized for the council chambers next Tuesday so if the Commission agrees to continue this public hearing until next Tuesday, I've made accommodations for us to meet in the Helen Nelson room which is upstairs, if the Commission deems that appropriate.

Chairman Block: The Helen Nelson room does not have the electronics does it?

Chris Greenlaw: No, but there can be a computer hookup to a screen. Perhaps Myra can tell us more, she's spent a lot of time there, but there is a screen that we can provide, if you need overhead projection.....

Attorney Regan: We've used that room before, I think that will be fine. We have navigated that room in the past.

Chris Greenlaw: Please contact me before hand and what we can do is we can accommodate, we can give you power.

Chairman Block: Let's make sure that we have enough audio-visuals so that the audience can participate.

Attorney Boorman: Mr. Chairman, I just want to confirm that those soil samples are going to be back from UConn on Monday?

George Logan: I got an e-mail, I don't remember, maybe it was today, maybe it was yesterday, it's a little bit of a blur from Dawn Patronelli that said that the person was going to come tomorrow to fix the apparatus so it sounds to me that they are not going to run them tomorrow, so it is going to be Monday or Tuesday.

Attorney Regan: Monday is a state holiday just to point that out.

George Logan: Tuesday then.

Attorney Boorman: Well, just to be clear, if we are going to use those results, the applicant has to have an opportunity to review them and respond to those, so we would have to get those to the applicant as soon as possible, so we will just forward through that as we proceed.

Attorney Regan: And that is part of my reason for why I requested that Chris notice Thursday for a meeting as well because we may need Tuesday and Thursday to get in under the deadline.

Attorney Boorman: I think that is probably likely.

Attorney Regan: Okay. Thank you.

Chairman Block: Before we go to the audience for participation, I just want on the record a motion to hold the next hearing next Tuesday?

Commissioner Clarks moved to hold the public hearing next Tuesday. The motion was seconded by Commissioner Igelski.

Commissioner Sadil: A question, just a technicality, is there enough time to post it in the paper.

Attorney Boorman: In terms of the paper, it doesn't have to go in the paper, we do that so the public will know. We do the best we can with it.

Commissioner Sadil: I just noted the regs.....

Commissioner Igelski: The regs are in respect to the initial publication of the first meeting date. Any continuation of the public hearing is just a courtesy on the part of staff to the public to read it in the newspaper.

Attorney Boorman: Exactly right.

The vote was unanimously in favor of the motion with six voting YES.

Chairman Block: With that, is there anyone from the public, we didn't have a sign-up sheet again. You don't have to, we can.....
Please, please keep it short and concise.

John Bachand, 56 Maple Hill Avenue: I've been a contractor for over thirty years in the water-proofing and drainage business. I did put a sheet there with some of my experience. Most of this letter focusing on the narrow subject of ground water and I must say, I feel pretty vindicated or validated I should say by everything that Mr. Logan just said, because if you read my letters you will see that it pretty much echoes the concerns that I have had especially about the ground water, so this whole letter is about a well on Cedar Mountain.

Chairman Block: Where is this located exactly in regards to the applicant's site?

John Bachand: We don't have a visual of the site, but....

Chairman Block: Mr. Logan said there was an old well on the site, is this it?

John Bachand: Yes, it's right here, six hundred feet away, it's actually the head water of basin one. It's where the water originates. I've been talking about this since I have been coming here, that this never dries out, it's an anomaly to me, because you have a stream on top of a hill, why doesn't it dry out. It's actually dry down here which is another anomaly but that is because it is filled up. Over here it's rocky, it's closer to the surface, over here the finer debris has washed down the hill for years so actually it disappears underground here, except when there is heavy runoff and then it goes under Mountain Road, but this well is right here, approximately 600 feet away, and it's the absolute origin, well I'm not saying the absolute origin, it still has more questions than answers to me. I have only just discovered this in the past week. Reading through the minutes of the October meeting, there was a quick question to Mr. Abrams about this Rubinowitz discover of this well. I refer to it in the letter there. She was hired by Toll apparently to delineate the wetlands. She wrote right in her letter, wetland one appears to be fed by a well. He was asked about that, he saw a broken pipe, but he didn't see a well. I went and looked at it, looks like a well. You know, it's almost, and I say this in the letter too, it's almost in our DNA. Well construction has not changed much in the thousands of years, you dig a hole in the ground, you get water in it, most people can identify that as a well, or a source of water anyway. A flowing well, it's an artisan well. I believe it's an artisan well, and I coined a phrase for this, something new and I think it's fitting, I believe there is, on this site, something you would refer to as a confined or fractured basalt combined aquifer. It sounds like a lot of words together but I think that describes it accurately. You would have to prove to me that it's not that, so I'm not a good speaker, so I'll let you read the letter, I think I wrote it pretty well and described the reason that I feel that way, and the reason, so much of what Mr. Logan said, as I said, I feel pretty validated and I feel that I wasn't just imagining this stuff.

Chairman Block: Are you saying that your field experience and your work experience support the hydrological explanation that Mr. Logan gave to us earlier this evening?

John Bachand: Absolutely. I think, I agree with most of what he said, I even take it a little farther. I don't think he even appreciates as much of its intricacies of this ground water system here. Because, and I don't blame him, because he has so many other things to do, I think it's very complex, it's very small, actually I believe. When we think of an aquifer, even me, I think of this hollow space, but it's been told to us by Mr. Slayback I believe that an aquifer is rock, it's just rock that can store water. We know that there are fractures in the basalt, and I believe in these complex theory, of the basalt storing water. This well is just about, to me, absolute proof of an artisan system, or a confined aquifer if I put some glossary terms in there for you to understand better. A confined aquifer is water trapped under a confining water and that makes pressure so that the water erupts onto the surface of the ground and that is what it is doing.

Chairman Block: Are you saying that you agree with Mr. Logan's conclusion as to the sensitivity of this site and the changes that are going to occur if the development proceeds as shown?

John Bachand: Absolute, and I think I actually came up with the theory first. Not to impugn the professional but if you read my first letter to the Commission, I actually you know pretty much laid that out, that the trenching and the excavating is going to intercept that ground water that is now flowing to the wetland, which I believe is flowing to the wetland, and again, there is, you know, like I said, I understand this stuff and feel this stuff, that I have been doing it for a long time, working in the field, small scale, I never come before meetings, I don't you know, basically I'm a glorified ditch digger, so I didn't know all these words and stuff, so I'm learning these words like

potentially metric lines, that's when I kept tell you about those potential, that word is better, so it's telling you where the potential water is.

Commissioner Zelek: I have a question on the slide. Is this something that flows year round?

John Bachand: That I don't know, because I just discovered it. They were given this information in 2010 by Cynthia Rubinowitz who told them exactly where the well was, so I don't know, they could probably tell you better. Mr. Abrams said it's not a well, to me it looks like a well, there is water coming out of the ground, so this is my theory, if you read that letter, I think I have an excellent theory, is that, who would build a well where water didn't flow year round. Mr. Slayback refers to quick flow or quick runoff in the subsurface. I don't believe that at all because after a storm when there is quick flow or runoff, you don't need a well. You need a well when things are dry, when it hasn't rained for weeks, that's when you need a well so I believe that this well would have been built at the site of an artisan spring, there is an artisan spring there, it's flowing all around the well and its flowing in the well itself. In this area here water is erupting out of the ground and the water rises up in this well. The well is not very deep, but it didn't have to be deep, it was just deep enough to dip a pail in there and take out a pail of water instead of scooping it out of a shallow ground level.

Commissioner Zelek: Okay, so to my earlier point, you know, maybe not a regulated area, but certainly a feature that we should be aware of.....

Chairman Block: This is actually shown.....

John Bachand: This is the headwaters of Wetland One and that is exactly what Cynthia Rubinowitz said in her letter, she said it appears that Wetland One is fed by a well. To me it's exciting because I have been looking at this, I have bike tracks, I have mountain biked up here, I have crossed this thing in the middle of the driest months, and there is always water in there, so I'm thinking where is it coming from? I've been saying it's been coming from ground water, which I think it is, it's a combination of ground water coming, this is in a deep ravine, if I drew my profile picture you would see, this is in that deep ravine, comes back up, it a little bit of a bowl here and comes back up to the construction area here, west, east, north and south. So, I'm curious myself, I wish I knew better. Is this flowing year round and that's why I've seen water in there all the way in the full length of it in August? It's a very good possibility, I wish I knew that, I'm sure going to check it out as often as I can now. But she stated that the wetland appeared to be fed by a well.

Commissioner Zelek: So on the map it actually says, well or spring.

Chairman Block: No, this structure, to the best of my recollection is not identified on the mapping that we have now. It just shows an origin point.

Commissioner Zelek: As part of the wetlands?

Chairman Block: As, for that particular.....

Commissioner Zelek: Now this is my point from before, just simple notations that something like this exists as part of the wetland area.

John Bachand: I don't know if wells are regulated or not I mean, I don't think anyone is going to use it to drink out of, but, oh, I'll just tell you this, I was there when the snow was on the ground and it looked like Grand Central because the deer are coming from every different direction so they apparently like this source of water as opposed to many other sources of water on the mountain. I don't know what that means. It might be something in that water that they like better

than the other water. But someone else brought up the questions about those, and this is where I kind of don't agree with George on that one, that those runoffs from the wetland, the overflows. I believe they are intermittent water courses. I don't know if that means they should be part of your plan or not, but they're very distinctive features and I don't agree either that I think that overflows a little bit more often than he may have appreciated it. That is a very limited capacity, that wetland. I told you that I did a measurement from the threshold of the overflow to the floor of the wetlands, there was a ten inch difference, so the majority of that wetland can only hold ten inches of water. There are a couple of low pockets where the water sits in the driest times but the majority of that wetland can't hold more than ten inches of water before it overflows. This is the artesian well, right at the end of the road. It's quite a phenomenon, pushes water up out of the ground.....

Chairman Block: That's not the same one you just showed before?

John Bachand: Nope, this is at the end of Garfield. It's at Eddy Farm, this has been here, I told you that the old timers used to drink water out of here, this thing flows all the time, this is a flow of water twelve inches off the ground. This is happening from the artesian effect, the weight of the water up the hill, going underground, under this confining layer, there is a confining layer here, it can't push through here, so it finds a way out. Someone tapped into it or they found a spring most like, and you have perfectly clean water over here.

So, we didn't get to hear from the applicant, I read the minutes of the meeting last week, and they talked about the coffer dam and they, I thought I mis-understood them to say that there were going to be six inch wide coffer dams in a twenty foot high trench. I don't know how you would even do that, it's not practical, it would never work, so again, I just want to say, I've been going up there for thirty-five years I don't think most of the people, the professional people working on this, they seem to think that this thing dries out, this is the first time that I have seen it as dry as I've seen it, and it still has water in the low pockets. So, typically it doesn't dry out, so that is why I think there's this vaster system, I'll just put these up so it makes it really easy to understand, how this works. How does this affect, how does water come out of the ground higher than the ground? You have to have this confining layer, you're building up pressure now, so this is that line, this is the potential for water to come out, see how high the water comes out of the ground because of the weight of the water over here. This well, you'd have to drill down under ground to hit the water, this one comes out at the surface. If you had a little fissure here, you would have a spring. This is what you have on the original picture. You have a spring, this is looking towards Old Highway, Old Highway is right over here, so this is looking south and you have a grade like this, and somehow here there is trapped water under this confined layer and it's in the fissures or it's somewhere in the ground, and it's coming out of the ground here. To answer Mr. Boorman's question, he was alluding to physical changes in the wetlands. My first letter talked about it, I believe, the second letter and the third letter. I believe that there are going to be physical changes, there is going to be filling of the wetland which reduces its capacity, obviously if you are reducing capacity you have a physical change. If you have erosion in the wetland and greater runoff, and more frequent overflows, you are going to diminish the wetland into just a channel, so it's going to be a run off channel. So, read the letter, I think it's pretty informative. Sorry I can't articulate the point as well speaking, but I think the letter says a lot.

Roy Zartarian, 23 Stuart Street: In the interests of time, I'm going to fast forward through just about all of my prepared remarks and refer you to my written statement where I provide for the record my credentials which is only fair since at the last meeting I said you should take a look at the validity of who is speaking. I'm going to include myself in that as well. I also raised the question of the validity of the Dru Associates precipitation data that was presented to the Commission. There was no source ever indicated. Again, take a look at the Dru Mitigation Plan, particularly where despite the assertion that Dru prefers to take guidance from prudent science, little literature is cited other than something on the design of a herp tunnel and the article by

Harper and others about which both CERT and one author of that article have already commented. Mr. Logan stole most of my thunder on Best Development Practices, but that's okay. That's good. This is a work which was presented for the record to the Commission. It was dismissed by Dru because it was a (inaudible) not published through peer review, because it is unproven and not based on scientific studies. Characterizing the best development practices as not based on scientific studies ignores the five pages of bibliography in the publication. Characterizing it as not published through peer review ignores an article that appeared in the Journal Wetland Ecology and Management, and my written statement has the abstract attached to it, where Calhoun, Clemens and another collaborator restate the concepts and finding of the original publication. Characterizing best development practices as not proven ignores its designation by the U.S. Army Corps of Engineers as a recommended resource to avoid and minimize impacts to the vernal pools. In support of best development practices and for general consideration by the Commission, I'm going to provide an annotated bibliography sent to me by Dr. Calhoun that is attached to my statement. The bibliography has four sections, and under each section are abstracts of the relevant articles such as the importance of the 250 foot life zone, use of alternative breeding habitats for vernal pool species, other wild life dependent on vernal pools, and State Regulation and Local Control. Dr. Calhoun prepared this document in 2010 for a legislative committee in Maine when the Governor there tried to overturn the state's vernal pool regulations. Dr. Calhoun's efforts were successful and in personal communication with me, Dr. Calhoun said that the literature cited and newer studies support best development practices and that, quote, we are finding that migrations dispersals, and life (inaudible) are, if anything, larger than what we expected. I'm going to wrap this up by saying, we are getting down to the wire on this application. I would urge the Commission not to let potential litigation sway you. Continue to act in a legally defensible manner. Accept that Toll Brothers will see a denial of this application as a marketing black eye and will come after the town with everything it's got. If you do commit the egregious blunder of approving the application, do so with stringent long term environmental quality monitoring restrictions and requirements. Impose the burden of compliance on the main corporate entity, not the shallow subsidiary that appears on the paperwork. Toll Brothers, whose net revenues for 2012 would run the Town of Newington comfortably for more than three years can well afford it. Thank you.

Allison Clark, 25 Wilbur Drive: Here we are again. Last week we heard a lot of testimony, we heard a lot about check, and seismographs, test drilling and blast monitoring. The thing that bothered me most after all the testimony is, that they seem to be excited, that there is little, if any research to draw upon when it comes to blasting near a wetland. Richard Hosley's presentation seemed more like a resume of the work that he has done, and a job application. He was already talking as if he was the blasting consultant. He said, I think this is going to be grabbed and this is going to be used in Texas, it's going to be used in Massachusetts, it's going to be used elsewhere as our society as our society migrates into concern for the protection of things. Which is fine, if it is done right. Doug Simms said, we are going to establish something brand new, we're going to establish data that might even be in publications five years from now. He responded to the question of blasting and the breaking of basalt under the wetlands by saying in my thirty-five years I've never experienced this question about wetlands and vibrations, and he was more concerned about Russell Road and the other side than he was with this particular issue. This lack of concern bothers me, especially because there is admittedly little evidence to go by. Did it appear to you that the experts are giddy with excitement to pioneer this project? Could it be their claim to fame? Many modifications were made to the plans in response to the CERT and the DEEP for input, on the town's responsibility to protect the swamp cottonwoods. On that note, I'd like to request that the town not blame REMA because everybody is scrambling at the eleventh hour to address these issues. We should thank them for discovering the swamp cottonwoods, for bringing it to our attention. Time table right now is not their problem. You should be more concerned with the research and the results than the time table. I know you all have a deadline, but if REMA needs another day or two to get these test results, you should give it to them, it's not

their faults. I cannot help wonder if Toll Brothers should have known that level spreaders should not discharge to a slope graded at five percent. You would think they would have encountered that issue at some point in the past. Why wasn't that taken into consideration on the initial plans? If they knew amphibian tunnels shouldn't be 190 feet long, why wasn't the tunnel 90 feet to begin with? Maybe one of the recent changes were communications in the CERT prior, they just chose to ignore them until the discovery of the swamp cottonwoods. They ignored the suggestion that house lots northerly of the amphibian tunnel should be removed, instead they added more house lot, three more house lots to that area. In Dr. Abrams's response to REMA's question number fourteen on page nineteen of the meeting minutes, REMA asked how would you ensure that the sediment forebay sumps, which would likely pond water in the spring of a given year will not become decoys and ecological sinks for the vernal pool obligate species. Dr. Abrams described a mitigation procedure utilizing (inaudible) and buckets every fifty or so feet, saying animals come to the fence, they meet it, they turn left or right, they move along they fall into the buckets. We visit the buckets every day and take the animals where we want them, no harm. The technique is approved by the federal government and each state government. He was licensed by the State of Connecticut to do this method before. Commissioner Paskevich asked who would do that and he said, that remains to be seen, but I've done it. My company has done it for nearly twenty years. Well, this procedure, this reliance on people to show up daily and check buckets, empty the buckets and carry the animals where they belong just didn't sit right with me, so I spoke to a Wildlife Biologist at DEEP, she said, this is called (inaudible) with pit fall traps and arrays. She said DEEP does not advocate the use of pit fall traps and arrays. She said they used to, and Dr. Abrams did get a permit in 2009, but they do not approve that procedure any more due to high mortality rates. The traps are not species specific, small and large animals alike can fall into the traps. Larger animals can eat the smaller animals. If the traps are not checked frequently enough, or if the weather is too severe, too hot or too cold, the animals die in the bucket. I then gave DEEP the page 7 from Dr. Abrams page 7, 2011 Newington Walk Herp Assessment. I asked if Dr. Abrams had a permit from DEEP to perform the activities listed therein. She checked her computer and she said no, he does not have an active permit. The only permit on record for Dr. Abrams was the bit, pit fall trapping permit in 2009 and she reiterated that they would not approve that permit now, so Dr. Abrams essentially did all of his research on Cedar Mountain without a permit from DEEP. To be clear on this issue, I asked her to clarify, what activities require a permit. She said, you do not need a permit to observe or monitor amphibian behavior, but if you trap, catch and release, use a net, or touch the animals in any way, you need a permit from DEEP. They need to be sure that researchers are adequately educated on how to handle animals and that they are using acceptable capture and release methods. I have additional copies of the page that I left with DEEP for the Commissioners. It is noted that Dr. Abrams also refers to trapping in his 2012 Mitigation report.

I was a realtor for twenty years and I hold an appraisers license in the State of Connecticut. Whenever I represented a client on the purchase of sale of a home, I always checked for the building permits in the town hall for anything that appeared to be newer, any new constructions to make sure it was legally done and the necessary permits were issued. I advised clients not to buy a house if any work was done without a permit. The town requires permits for all construction, and the town should be highly suspect of any activity performed without a required permit. Can you be sure that Dr. Abrams performed his job correctly when he flew under the radar of DEEP? He cut corners, overlooked and/or did not disclose things. In closing, I would like to share a personal story. Several years ago I began having hip pain. First I went to physical therapy. After repeated attempts with no success I went to an arthritis specialist and an orthopedic specialist. The orthopedic doctor sent me to another orthopedic specialist because there was only one in Hartford who did that particular type of surgery I needed. The specialist said they would need to (inaudible) in three places, put rods and put pins in and then put the hip back together, and I needed both hips done. Each surgery needed six months, and I could not put any weight on either leg, so that means a year basically of not walking. The surgery was most often performed on babies and children, not women my age. The Hartford specialist was

almost giddy thinking about doing it. He wanted to schedule the operation in two weeks. Honestly, I felt like I was going to be an experiment and a guinea pig. It just didn't feel right. I asked the specialist how many times did he perform this surgery and he said, many times. Then I asked how many times have you performed this surgery on somebody my age? He said, several. Needless to say, several worried me so I said who performs this surgery a lot. He gave me the name of a doctor in Boston. I went to see that doctor. That doctor performed a slew of new tests, ones that the Hartford doctor never even suggested. So, because of my age and the inherent risk the doctor said he wouldn't even do the surgery unless he was ninety-five to one hundred percent sure that it would be successful. He said that he was only ninety percent sure that it would be successful in my case, but he did not recommend surgery. The Commission did the right thing by engaging the CERT and the additional expert. Had I taken the recommendation of the first three doctors I would have had a surgery that I probably wouldn't be comfortable with, and I would have been laid up for a year. I never had it, but I can tell you that I'm glad I trusted my instinct. I didn't feel like the doctor, the doctors were giddy, they wanted to do it, I was going to be their guinea pig. I didn't like the fact that they seemed so excited. It's funny that Toll Brothers said that the surface water draining into the wetlands will be ninety percent cleansed. Coincidentally, my specialist said ninety percent wasn't enough. Consider the things that Toll Brothers experts did not discover, the things that were not disclosed and the things that were done without a DEEP permit. Don't let this desire to make history put Cedar Mountain at risk.

Holly Harlow, 11 Edmund St.: Let me just quickly say thank you very much to all of the Commissioners for putting so much energy into this application and sticking around so late, like the rest of us. I first just want to say something about conditions. I believe conditions of a permit approval should not be used to remedy serious flaws in a plan which has make or break implications. The onus is on the applicant to produce a plan that respects and protects fully each and every aspect of this fragile environment, not on the Commission to fill in what the applicant has failed to produce in construction management or monitoring initiative. I think we have made it clear that we are all looking at the impacts to the physical characteristics of the wetland and that is what you will be deciding on and you will be using all this information in the record to judge the credibility of the evidence and the testimony and these are just a couple of things that I have chosen to speak to you about. There are many instances of this, and this is the beginning. The environmental consultant Dru Associates is in the record as having misused the data table from Harper et al paper. We've heard omissions about the details regarding the upland buffer needs of the amphibians and the vitality of the wetlands for breeding purposes. We've heard descriptions of the protocols necessary to construct and place and maintain the amphibian tunnels. CERT's opinion thinks that the tunnel will do more harm than good, because the amphibians are being dumped into an outlet that is impaired. Regarding the western wetland, there is housing proposed for three of the sides of that wetland and the CERT states that, I'm sure about how you keep the amphibians from dispersing in directions other than the tunnel, or developed areas, and Miss Gadwa from REMA agrees with that, saying that the amphibians don't orient, that they set off in any particular direction, but I don't see that Dr. Abrams shared that type of urgency about that. The CERT worries that the bullfrog tadpoles from the detention pond could harm the wood frog and the salamander hatches. They are apparently a natural predator. Jodi Chase's 2011 report also sites the risk of the wet detention basins becoming decoys. Dr. Abrams doesn't seem to look at this risk the same way. While Dr. Abrams states that the population of the swamp cottonwood trees is short lived and there was no evidence of seedlings and youngsters, Miss Gadwa testified that there is indeed a large population which we have learned, with many saplings of two or three inches. The CERT report states that wood frog tadpoles are thought to be beneficial to the wetland water quality because they remove algae and larvae salamanders consumption of other organisms is an important part of the nutrient cycle between the pool and the surrounding uplands. The wood frog and salamander population declines or are extensions in the pool, that would alter the water quality nutrient cycle in the pool because the water quality is important to the swamp cottonwoods would mortality among the amphibians also

mean risk to the trees? I think we have probably heard the answer to that. Dr. Abrams is also reported that being a contributing factor to Russ Slaybacks's conclusion that the wetland were perched basins rather than fed by ground water, and if that is so, then I kind of question that conclusion since in 2011 that Jodi Chase's assessment concluded herself that the wetlands two and three were ground water depressions. But that was then, when the initial plan called for filling wetland three. When diminishing viability had justified that. Remember the gage that was stolen from wetland three? This time is the objective to dispel ground water as a source of wetland hydrology in order to downplay the risk of the integrity of the wetlands from the excavating and blasting? Tonight we learned that presumably that Dr. Abrams performed the amphibians captures in 2011, he did so without a permit, but I think more significantly is the plan that Allison described from, to trap and redirect the amphibians out of harms way, would not be allowed in the State of Connecticut according to DEEP and that would be an unavailable conservation strategy. Dr. Abrams is on record as stating that these wetland have been exposed to human and domesticated animal activity and are therefore not pristine. We have heard evidence to the contrary tonight and Jodi Chase herself in 2011 said that wetland two met ACOE criteria, including the wetland not being degraded by human activity, and of course Mr. Logan vigorously believes that to be true. Further to that, last week, or last meeting, Mr. Abrams showed an air image of Cedar Mountain to presumable downplay the environmental value of this plan because of its alleged condition fifty or eighty years ago. It is irrelevant, and I for one resent this latest incident of using expert credentials and license to bend and shape science fact and perception to conform to his or the applicant's desired results in what I see as hopes to falsely influence this Commission. What else has been said on the record that is wholly or partially not true? Throw it against the wall and if it sticks, so be the better for the applicant, but maybe the hell with the wetlands.

Myra Cohen 42 Jeffrey Lane: Member of the Town Council but speaking just for myself. I thought that once the Council was going to use this room for their meetings I would no longer have to worry about a conflict with the Council and this Commission meeting the same night. I guess I was wrong on that one, and I will again have a conflict and probably miss the entire meeting that you will be holding next week because the Council probably will have a long night that night too. The home owners agreement that we were told about by the Wethersfield officials as far as I'm concerned, would not be worth the paper that it is written on. Would Newington be expected to be guard on private property and watch what the homeowners are doing that would cause permanent damage that whatever money is put aside can never reverse. That is something that, as far as I'm concerned is absolutely unworkable, but it probably doesn't matter because before we get to the homeowners being there this reconstruction, the plan proposed by Toll Brothers will already have done permanent damage to what is more and more, we learned, is absolutely unique to Newington. Not only do we have so little open space left, but this is a special kind of open space and what we are learning is that there is a domino effect, that once thing happens that everything, one after another is going to be destroyed. We are relying on, I mean, all these people here and many others that don't come but are following this, we are relying on this Commission to be doing, I know that it's a big job that you have, studying everything and we are not even done with the public hearing part, but we are relying on you to help us preserve what is very, very special to Newington. Don't let this development, of any kind, come in, because no matter what they come up with, they are eliminating the information until we totally find out, what they have intentionally or accidentally overlooked, it appears now that no plans that they can come up with no matter how they revise what they are representing, nothing is going to work up there, we are counting on this Commission, so please, please find a way to look at all the evidence. It's right there, to absolutely reject anything that comes up there. Thank you.

Judy Libbe: I'm a lifelong resident of Wethersfield and Newington used to be a part of Wethersfield. I lived for the first eleven years of my life we grew up on the banks of the Connecticut River, down by the cove. What used to be our backyard has been cut off by I-91, destroyed that end of Wethersfield. I have my families home now, across the street from two cemeteries, Cedar Hill cemetery and the Jewish burial ground across the street, and when we moved up there in 1947 I remember our being able to slide down the backyard with the two fellows next door and looking at beautiful inland wetlands with deer and swamp maple and open water. When the Stop and Shop shopping center went through those inland springs are still there and they come from Cedar Mountain, and I wouldn't be bothering any of you at this hour of the day, except I spent all day writing these comments and I gave up choir rehearsal to be here tonight, and that means a lot. One brief letter in a 2011 spring issue of Wethersfield Life alerting Wethersfield residents of pending development on neighboring Cedar Mountain prompted me to attend one of the early public sessions here in Newington regarding this development then over sixty private luxury homes. Since then I have attended a number of sessions and have heard citizens from within this town and beyond sharing their concerns about the impact of such extensive building in a largely untouched, peaceful and scenic area, one I discovered is well known and much loved by many area hikers. You and other Commissioners have already heard it said, once the land is taken, it is gone forever. You and other have heard it said that pesticides, once introduced into the developed area are there to stay and will in time intrude into other areas. You have heard about the clear fresh water now moving down from Cedar Mountain as it has for countless years, feeding into many streams and brooks on each side of the mountain. You have heard concerns about effects of blasting in bedrock to prepare the targeted area for foundations, utility and sewer lines among other things probably, concerned about good intentions but not always possible to be kept intact. If these proposed lovely homes are to be heated by natural gas what if a gas leak, mixed in with a gas explosion in this somewhat isolated setting, or a propane leak from a gas grill or propane tank, or increased air pollution as resident's cars come and go each day, or chimneys emitting who knows what when a fire in the fireplace seems just the right thing to ward off the chill. What will happen to the ponds and brooks and nationally recognized historic Cedar Hill Cemetery also an animal sanctuary there if its water sources on Cedar Mountain, and they are such because I talked with Bill Driscoll, the superintendent over there, are interrupted, diverted, polluted or even destroyed. In all likely I have learned, Cedar Cemetery will cease to have the lush garden like setting that so many have come to love, its water will have disappeared in time. Further south, immediately adjacent to Cedar Hill Cemetery is another burial ground belonging to the Jewish tradition and located even closer to the proposed development area. Exactly how that may be impacted remains to be seen, I've not ever been there. Jefferson House patients and I was one for five months after two hip replacements so I know that life is like over there, Jefferson House patients and long term elderly residents, the animal shelter at the Connecticut Humane Society on Russell Road, the patients and residents of state run group homes off of Hartford Road, those at Avery Heights, an assisted and long term care facility to the north are more likely to be affected by all of the blasting which will be needed to prepare the area for residential development. On a bright, quiet, pleasant morning in July of 2011 when I was working in the backyard, shortly before noontime, I was startled by what can only be described as a blast from nearby, somewhere. I do not know, nor will ever know the exact source of location of the blast, but many of us can recall what life is like when the quarry was still in operation. Ceiling cracks in our houses abound, our houses have been there since 1938, and there is no mistaking a powerful blast. If this is what lies ahead to prepare the targeted area for development, this entire area, the surrounding area is in for some rough times. Commendable efforts have been made and are being made by the applicant to address environmental concerns expressed by the towns of Wethersfield and Newington by local and other area concerned citizens. I believe many would truly appreciate efforts to mitigate, alleviate, channel, redirect all within the reach of civil engineers and other trained experts using these same creative and achievable measures instead to create a lovely and livable development on land that has already been taken. What a joyful day it would be to see some long neglected area brought back to life in

a new and positive way. The ravens are already establishing themselves on the rocky face cliffs of Cedar Mountain according to the Hartford Courant. The deer who peacefully wander along the ages old trails at Cedar Hill Cemetery in Hartford to areas south of there in Newington and Wethersfield. The black razor snakes, coyotes, foxes, the vernal pool creatures and who knows what other wonderful animals live there. Migrating birds seeking their age old resting places throughout Cedar Mountain, the very precious clear water which is becoming a previous commodity throughout the world, the precious underground water which feeds underground springs and ponds and streams and eventually the Connecticut River, for each of them, and for all of these, and for all of us because we only have one planet to live on, ladies and gentlemen, please, please for all of us, please consider carefully your decision. As Robert Frost has written, "two paths diverged in the yellow woods, and I, I took the one less traveled by." Thank you for your time.

Wayne Alexander, 28 Burden Lane: Good evening. Just very briefly, development of this land is going to destroy what the land was originally. I'm sure that that land has been there long before we have been, and it's going to be there long after we are gone, but for one possible moment in time, where we are coming to a nexus here. This is virtually the last parcel of the land in the Town of Newington that is undeveloped. Everyone of these Commission members know that. This is the jewel of this geographic area and when we think about it, not developing the land is the legacy we leave for the present and future residents of the Town of Newington. So I ask you, did this Commission get every question answered by the applicant? And I know that you must be sitting there thinking to yourself no. And what are they still working on, what are they still discovering? Do they really have a blasting plan that actually works? And were any of the answers that you received, were they misleading, or was important information omitted? Maybe that is why you got Mr. Logan here, because you kind of felt like that. You know, besides the fact right, and I read some minutes from the last meeting, besides the fact that Dr. Abrams is a bit, maybe snarky, or condescending, it's important to note that he has an agenda. It isn't consistent with the Town of Newington. Abrams will say and not say what his current masters want him to, and while he may take exception to that statement I just made, the citizens of Newington take even greater exception to having Cedar Mountain irreversibly altered, based on his expert opinion. Now we know that he works for Toll Brothers. What do we know about Toll Brothers? All right, it's all over the news. EPA, clean water settlement, \$741 thousand dollars. But did you know that their investor lawsuit cost them another twenty five million dollars. Chicken Feed. Delaware complained against them, another 16.2 million dollars. Did you know that Toll Brothers houses have such serious defects that the company buys them back from their owners. That Toll Brothers blames the buyers for the problems with their homes, that Toll Brothers threatens to tie up the buyers in courts for years, and one association, the North Side Piers Towers in New York City launched a full media offensive against the Toll Brothers. That's just like scratching the surface, that's like a half hour of research. So I ask, does this Commission seriously want the applicant to get an approval from you with a track record of, I'll just pay the fine if anything goes wrong, or I will blame the Town, or anyone else just to make sure I limit my liability. To conserve means to prevent injury, decay, waste or loss. To use or manage natural resources wisely, preserve, save. The Commission, all they have to do is to adhere to this mission. Prevent the loss of the most precious thing in Newington, the undeveloped land. Your decision will be the legacy for years to come. Thank you for your time.

Commissioner Sadil moved to adjourn the meeting. The motion was seconded by Commissioner Clark. The meeting was adjourned at 11:10 p.m.

Respectfully submitted,

Norine Addis,
Temporary Recording Secretary

